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Sparks of Musical AGI? Challenges and perspectives in music co- creation with LLMs

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Abstract

In the paper *Sparks of Artificial General Intelligence*, the authors show how OpenAI's GPT-4 is able to do well in a variety of tasks that be represented with text and claim it to have “a more general intelligence than previous AI models.” One of the tasks they explore is symbolic music generation. In this paper we critically analyze their results and extend the discourse around the capabilities of LLMs for music by exploring additional musical tasks and LLMs. Furthermore, we will investigate the viability of smaller models when used in conjunction with Retrieval Augmented Generation, as well as finetuning on programmatically written prompts using Quantized Low Rank Adapters. Finally, we discuss some critical aspects of LLMs as a tool for music generation.

Author Keywords

Large Language Models, Music Co-Creation, Music Understanding, Finetuning

Introduction

The paper “Sparks of Artificial General Intelligence: Early experiments with GPT-4” [1] describes engaging an early version of OpenAI's large language model (LLM) GPT-4 with a multitude of tasks, such as solving complex math problems, creating vector graphics and animations, and answering questions from a variety of professional exams (e.g., programming, medicine and law). GPT-4 shows such a level of competence that Bubeck et al. [1] claim it and comparable models “exhibit more general intelligence than previous AI models.” This is especially impressive given GPT-4 is likely trained to only predict the next token in textual sequences scraped from the WWW,¹ and not to specialize in any specific domain of knowledge tested by Bubeck et al. [1].

Music is one of the domains tested by Bubeck et al. [1]. The authors observe that in the web-scraped training data there is symbolic music in the abc-notation format,² and so GPT-4 might also possess abilities in music, such as “composing new melodies, transforming existing ones, and understanding musical patterns and structures.” They provide an example interaction where GPT-4 is asked the following questions, with it responding after each one:

1. *Can you compose a short tune (say four to eight bars) using ABC notation?*
2. *Can you describe the tune in musical terms?*
3. *I like part A, but maybe part B is just a bit too similar to part A, making the song repetitive. How about beginning part B with a descending arpeggio instead of a rising one?*
4. *That's much better. Now how about making this into a duet, can you add a second staff for this with a bass accompanying the melody?*

When asked to generate a melody, GPT-4 provides a very simple one, within the required lengths. The authors highlight the correctness of the abc-notation, the presence of some musical form, and consistency with the time-signature but that it lacks intervallic variety. When asked to describe the melody, GPT-4’s account of the tune’s melodic contours, structure and harmony is deemed successful by the authors only noticing some inaccuracies regarding harmony. For the other two tasks the authors do not provide much commentary beyond describing the task. GPT-4 produces the tune with a new B part, and then creates a second voice as asked. The authors highlight how it has the appropriate rhythm and range but not harmony.

While it is true that syntactical and formal soundness is typically problematic for sequence models, we can argue it is quite a low bar to clear. The description GPT-4 creates has factual mistakes and imprecise technical language. The model points to arpeggios in its melody — a series of notes outlining a chord — yet they are not present. It uses the term “tonic notes” to refer to chord tones of the tonic triad, which is unusual. It also makes other mistakes with musical terms, such as confusing the sub-dominant with the dominant. For these reasons it is difficult to claim the response of GPT-4 — though impressive given its generalist training — is as successful as the authors do.

We asked ourselves: “are GPT-4’s music outputs “sparks” of musical Artificial General Intelligence?”. This question might be too open to answer, but from it we approach the following research objectives:

- *Exploring the musical knowledge in LLMs and how it can be tested*
- *Investigating the difference in performance between bigger and smaller LLMs*
- *Can small generalist LLMs be turned into specialist models combining domain expertise with retrieval augmented generation and finetuning?*

This paper seeks to extend and deepen the initial explorations by Bubeck et al. [1] to consider other aspects of music intelligence exhibited by LLM. We try to gauge the depth of the musical knowledge in an LLM with a qualitative approach, asking exam-like questions that one could find in music theory textbooks. With the public release of other LLM competing with GPT-4, we are able to look for sparks elsewhere as well, extending the same analysis to other state-of-the-art LLMs, including smaller models, going as low as 1.6B parameters, on the same kinds of tasks.

In the next section we describe and discuss our qualitative experiments, testing eight other LLMs in the vein of Bubeck et al. [1]. After that we explore working with smaller models and how they might be adapted for symbolic music generation tasks, using Irish traditional music as a testbed. Finally, we discuss our results and elicit some critical aspects of LLMs as tools for music creation.

Looking for “Sparks” of Musical AGI

Since the release of GPT-4 a number of other LLMs have been released. The following table lists the ones we tested. We also cite the MMLU [2] scores as an indication of performance, although most scores are self-

reported, and the testing conditions are not uniform.

Model	Parameters	Open Source	MMLU score
OpenAI GPT-4 [3]	undisclosed	✗	86.5
Google Gemini Advanced [4]	undisclosed	✗	90.0
Anthropic Claude 3 [5]	undisclosed	✗	86.6
Mistral Le Chat Large [6]	undisclosed	✗	81.2
Meta LLama2 70B Chat [7]	7×10^{10}	✓	68.9
Mixtral 8x7B [8]	5.8×10^9	✓	70.6
Mistral 7B [9]	7×10^9	✓	60.1
Microsoft Phi 2 [10]	2.7×10^9	✓	56.7
StabilityAI StableLM 2 [11]	1.6×10^9	✓	41.8

In this section we investigate how these LLMs perform in zero-shot scenarios, i.e., the situation in which a model is not specifically trained to address a task. In addition to asking an LLM to write melodies following the pattern of Bubeck et al. [1], we will also ask it questions about music theory and discuss the responses qualitatively. Listed below are the kinds of questions we pose to these LLMs (see Appendix for exact wording):

1. *How many flats/sharps are in the following keys? ...*
2. *Which key signatures feature the following number of flats or sharps: ...*
3. *Write the notes in the following scales: ...*
4. *Name the interval between each couple of notes: ...*
5. *What notes are in the following chords? ...*
6. *Name each of the following chords: ...*
7. *Name the time signatures for each measure in the following snippet: ...*
8. *Write a II-V-I in the following keys: ...*
9. *What seventh chords can be constructed on each scale degree?*

Questions #4 and #6 were also asked using the abc-notation format for pitches with `_`, `^` and `=` representing flats, sharps and naturals. Question #7 features abc-notated measures and is used to check if the models can count. The choice of pitches, keys, scales and chords is arbitrary and tries to aim both at cases that can be tricky and trivial for humans. The questions were administered one by one, but for models with long context

windows they could also be input in one prompt. This however resulted in shorted answers and more mistakes. A sample of the responses of all LLMs to these questions can be found in the Appendix.

We want to highlight that this is a qualitative evaluation with no effort of being exhaustive. Given the heterogeneity of models and services, controlling for all significant factors is impossible. Our goal is not producing a new metric or benchmark to optimize but rather provide a description of the experience that can help redefine expectations around these systems.

Below we summarize the results. Tasks G1-5 are generation questions using similar prompts by Bubeck et al. [1]. The rows labeled 1-9 correspond to the nine questions above. The subjective scores are between 0 and 3, with 0 being a complete failure and 3 a perfect output.

	GPT-4	Gemini Advanced	Mistral LeChat	Claude 3	LLama2 70B	Mixtral 8x7B	Mistral7B	Phi 2	StableLM2
G1	2.5	2.5	2	2.5	1	2.5	2	0	0
G2	2.5	2.5	2.5	2.5	1	2.5	2	0	0
G3	1.5	1.5	2	2	1	2	1	0	0
G4	2.5	2.5	2.5	2	1	1	0	0	0
G5	2.5	1.5	2	1.5	1	1	0	0	0
1	2.5	2.5	2.5	2.5	1	2.5	2	0	0
2	3	3	3	3	1	0	2	0	0
3	2	3	3	3	1	2.5	1	0	0
4	2	2	2	2	1	1	0	0	0
5	3	3	3	3	1	2	0	0	0
6	2	2	2	2.5	2	2	1	0	0
7	3	1.5	2	3	1	0	0	0	0
8	2.5	2.5	3	3	2	3	1	0	0
9	2.5	3	2.5	3	1	1.5	1	0	0

OpenAI GPT-4 [3]

We started with asking theory questions to GPT-4, since Bubeck et al. [1] does not feature any question about musical concepts like harmony and chord progression. The model was accessed through OpenAI's platform³ and tested using default hyperparameters.

We find that GPT-4 performs overall well, but often makes mistakes for uncommon notes or keys. For example, it can get wrong the flat counts in D \flat minor or the notes in A \flat minor. When abc-notation is involved in the specification of sharps and flats GPT-4 sometimes fails to correctly interpret it — e.g., interval and chords in questions #4 and #6. Question #7 is answered correctly if asked separately but in the case all questions are fed in one go the model fails to parse the measures correctly. Question #9 sometimes featured minor mistakes on one of the scale degrees.

Google Gemini Advanced [4]

Gemini Advanced is a chat system by Google, powered by their LLM Gemini Ultra 1.0 which allegedly surpasses its competitor in most benchmarks.

We started with the music generation task. Gemini easily completes the task but often stops at a single section, in which case we asked to add another one. The melodies are often very scalar, and in C major unless specified otherwise in the prompt. Editing works as expected but the creation of a second voice struggles with abc syntax. Similarly, the tune features the `L: 1/8` header but is written as if the base step was actually `1/4`. We consider these minor errors as any user would be able to quickly adjust them. The model tends to describe its reasoning for most prompts, even when not asked to do so. The quality of the musical description however is not very informative, when not technically wrong, as already seen with GPT-4. The creation

When it comes to the questions, we see the Gemini do well, only struggling with uncommon keys in question #1 and #8. Intervals and chords in abc notation proved difficult, but the latter were addressed correctly using common symbols. Counting rhythms in question #7 also failed probably because of syntax. Gemini tends to often explain the process when answering, but sometimes the explanations contain additional mistakes.

Mistral Le Chat Large [6]

Le Chat is a chat system powered by the Mistral family of models. We experimented with the *Large* version.

The experience is quite similar to Gemini and GPT-4. Music generation shows once again a strong tendency to generate scalar melodies in C major. Tuning hyperparameters might help but we do not have access to those from the web interface. The description is also quite vague and references to concepts like arpeggios and dominants are misused. The second voice was mostly correct in syntax but musically very simple and it disregarded the harmony implied by the melody.

Question answering shows almost the same behavior, with imprecise answers for uncommon keys and difficulties with abc notation and intervals. The specific mistake might be different, but they tend to happen in similar situations.

Anthropic Claude 3 [12]

Anthropic's Claude 3 is also an instruction tuned LLM, offered in multiple variants trading off performance for throughput. We used the larger model named Opus.

Music generation is consistently reliable and appears to be less scalar than the other models, albeit still favoring C major. The musical description is factually correct but quite shallow and uninformative. Editing the A part was performed correctly, reminiscing the following part, and the duet was created with good syntax and meaningful harmony. Still, melodies are very redundant and uninteresting.

Claude 3 performed the best in music theory questions, making similar mistakes to the other models in questions #1, #4 and #6 but to a lesser extent. Administering the questions in one batch does not seem to change the performance too much.

Mixtral 8x7B [8]

Mistral.AI also released a peculiar model called Mixtral, that features a mechanism called mixture of experts. As the name of the model suggests there are 8 replicas of the model each trained in slightly different ways that can be sparsely queried at inference time. This method allows for higher accuracy while keeping inference time as low as a smaller model.

As expected, Mixtral is less reliable than larger models when it comes to music writing, although the difference is not too big considering its size. The generated melody is decent, and the model is able to extend it properly. The description is very limited but not hallucinated. Editing the tune and adding a second voice proved difficult, with the edit being of the wrong length and the duet containing syntax errors.

Music theory questions showed a clear decrease in performance, with more and more hallucinations popping up. The model is quite unpredictable, answering correctly when asked about the number of alterations in a given key but then failing when the question is reversed.

LLama2 Chat 70B [7]

LLaMa-2 is a model developed by Meta. Here we will try the instruction tuned 70B version.

Starting with the generation tasks, LLaMa-2 has a hard time even generating a short melody in proper abc-notation. Perhaps the way the training data was processed messed with the representation or the tokenizer is not particularly friendly to the coding style (This happened for example with GPT-2 and Python code). This ends up spoiling the rest of the generation tasks.

Music theory questions show more or less the same situation with Mixtral, with the occasional questions that are not even answered in this case.

Mistral 7B-Instruct [9]

Mistral 7B is the smallest open model provided by Mistral AI, with 7 billion parameters. It was released both as a base model and instruction tuned for chat. We used the latter to be in line with all the other models we discussed up until now.

Music generation feels like a slightly worse version of the Mixtral experience, failing on edits and adding the second voice. Music theory however is considerably worse, with the model giving wrong answers to most questions or hallucinating text that does not even qualify as one.

Microsoft Phi 2 [10]

Phi 2 is a model released by Microsoft, who labeled it a Small Language Model by virtue of the fact it has around 2B parameters.

As we can expect at this point, such a small model is not performing well in any of the tasks. Given the way training was framed for these models with Questions/Answers paired in an exam-like fashion, Phi 2 will sometimes keep outputting other questions after attempting an answer. Even when this does not happen, however, the model will confidently hallucinate answers that are not correct or even relevant.

StableLM2 Zephyr 1.6B [11]

In a similar vein, Stability AI approach to language modeling seems to prefer smaller models. We used their StableLM2 in the instruction-tuned version based on the Zephyr methodology by Huggingface.

The model fails all tests, similarly to Microsoft Phi 2. The answers suggest there is a certain degree of understanding of the questions sometimes, but the answers are completely hallucinated and unstructured.

Adapting Mistral7B to abc-notation

In the LLMs we tested, the ability to generalize is remarkable, but as we have seen their musical knowledge is lackluster. When we go beyond simple demonstrations, systems cannot reliably interpret musical language and output consistent music or descriptions. This could be a deal breaker for most musicians interested in using AI in this sort of collaborative effort. We can easily speculate that these shortcomings are only due to lack of specialized training and evaluation, rather than an inherent limit of LLMs. Given the size of most systems however, retraining or finetuning is not an option for most researchers and artists.

A simple solution is providing additional information in the prompt in order to leverage the in-context capabilities of the models. We will briefly discuss how Retrieval Augmented Generation (RAG) can make even

the smaller models able to generate syntactically correct abc music without any training. Slightly more involved, finetuning LLMs is also now becoming a viable strategy, at least for those with moderate size, using a technique called Quantized Low Rank Adapters (QLoRA)

We wonder if it would not be possible to use smaller models in combination with MIR approaches to obtain something that is tailored to the needs of any individual artist and independent from large companies.

For our tests we will use Mistral7B as a base. Using quantization, a model like this can be finetuned on a consumer GPU or using freely available resources like Google Colab. Given the existence of a large dataset in ABC notation that facilitates the comparison with what we saw previously we will use Irish traditional music as a testbed. Nonetheless, the ideas we are showcasing would work with any symbolic music standard.

Retrieval Augmented Generation (RAG)

RAG combines text generation and some sort of database query in order to generate responses. After the user sends a prompt, the query is constructed by a subsystem and the response can be embedded in a system prompt that is transparent to the user. With the proven in-context learning capabilities of LLMs this is sufficient to get meaningful and correct results.

Jonason et al.⁴ used abc-notated folk music and GPT-4 to demonstrate how RAG enables generation, editing and style transfer with stylistic coherence while mitigating syntax errors. The experiment was based on easily detectable attributes like key and meter but as long as the retrieval part can be expressed other aspects of the generation could also be provided by example, e.g., tune structure, melodic contours, etc.

We tried to extend the same principle to small models hoping to get the same benefits. All models mentioned benefit from the inclusion of a number of examples in the prompt. The impact is especially impressive for the smaller models, which were not capable of outputting abc-notation reliably in the zero-shot experiments.

Providing three tunes from thesession.org dataset with the same style and key makes Mistral 7B output correct abc-notation that matches the style, an example is shown below. However, the music is not always interesting, and mistakes still appear. Hyperparameters such as temperature and top-p sampling are important to achieve good results. The smaller models we tested, Phi and StableLM, are less reliable with RAG and often produce syntax errors.

<s> [INST] Here are some examples of tunes written in abc-notation.

```
X:0
T:Boys Of Coomanore, The
K:Dmajor
M:6/8
R:jig
|:FGE FDD|cde dAG|~F3 FDD|FGE FAG|
FGE FDD|cde dAG|FGE FAG|1 EDC DAG:|
|:ABc dcd|fed ecA|ABc ~d3|fag fed|
ABc deg|fed edc|AGF EAG|1 FDD D2 B:|
```

X:1

T:Frost Is All Over, The

K:Dmajor

M:6/8

R:jig

|:~f3 edc|dAF GFE|DFA dFA|~B3 efg|
fed edc|dA/A/F GFE|DFA dFA|B/c/dc ~d3:|
|:~f3 afd|g/a/bb bag|~f2 aaga|gfg ~e3|
~f3 afd|gg/g/g bag|fga efg|fdcd3:|

X:2

T:Isaac's Welcome To The World

K:Dmajor

M:6/8

R:jig

AAA ABd|e2 f2|AAA fed|BAAF|AAA ABd|e2 f2|aba f2 d|ed e2:|
aaa fed|e2 f2|aba f2 d|ed B2|aaa fed|e2 f2|ABd dBA|fe ed|
aaa fed|e2 f2|aba f2 d|ed e2|aaa f2 d|ed e2|fed e2 f|BAAF||
````

Write another one based on them. Titled 'Sparks'. [/INST]

X:3

T:Sparks

K:Gmajor

M:6/8

R:jig

|:G2B GED|cBd dGB|G2B GED|G2B AGB|  
G2B GED|cBd dGB|G2B AGB|1 AGF G2:|  
|:d2g bag|fed ecB|d2g bag|gfg e2|  
d2g bag|fed ecB|gfg e2|dBA d2:|  
|:G2B GED|cBd dGB|G2B GED|G2B AGB|  
G2B GED|cBd dGB|G2B AGB|1 Bdg g2:|  
|:d2g bag|fed ecB|d2g bag|gfg e2|  
d2g bag|fed ecB|gfg e2|Bdg d2:|

This new tune, 'Sparks', shares the 6/8 time signature and jig rhythm with the provided example.

**Sparks**

*jig*

Music notation for the RAG output. The tune is quite repetitive, but syntax is mostly correct and structure is appropriate.

## Fine-tuning

Quantized Low Rank Adapters (QLoRA) [13] have quickly gained popularity in the image generation and LLM space as they allow people to finetune large models with little resources. Low Rank Adapters fine tuning works by training a small set of parameters in the form of low rank matrices that are then combined to specific parts of the model, usually the linear layers in the attention mechanism. The memory footprint of the adapter is very low, so it does not add overhead to the model in memory and since the model is frozen the operation is also computationally cheap.

Since models are still quite big the quantization part is what allows to fit a 7B model in a consumer GPU. The QLoRA paper features a clever mechanism called 4-bit NormalFloat Quantization that consists in creating dynamically sized quantization bins that have a balanced number of values following quantiles in the cumulative distribution of values. We leveraged the *Mistral-7B-Instruct\_v0.2* implementation in Huggingface as well as their PEFT library for fine tuning.

The dataset was constructed by taking the latest data dump from [thesession.org](https://thesession.org) and building prompts algorithmically with information from the tunes body. Attributes like title, meter, key and style are easily found in the headers while other aspects can be inferred by parsing the body of the tunes. For demonstration purposes we selected a few that are easy to conceptualize and extract:

- Key, Meter and Style (abc headers)
- Length in measures (ignoring anacrusis)
- Chords
- Variations

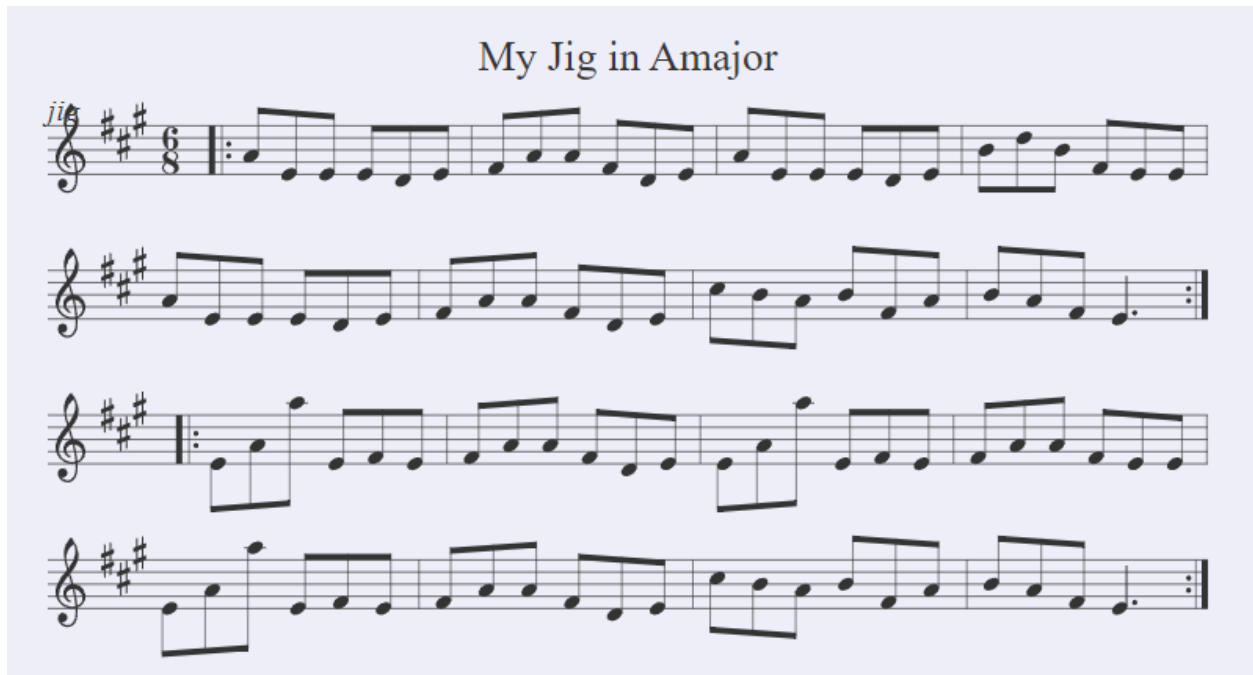
We built prompts programmatically using a template that mentions all the extracted information, with the possibility of dropping some at random. These prompts are then rewritten using a plain instance of Mistral7B to avoid overfitting on their wording. Additionally, we modeled the task of adding chords by sampling tune with chords and removing them in the prompt. Similarly, we selected the 500 most popular tunes that feature many variations, and we sampled two at random to build the prompt asking for a variation on given tune. We achieved good results with a small dataset with 2000 prompts of the first type, 1000 chords prompts and 1000 variation prompts. Below we show some examples.

```
<s>[INST]generate a jig in abc-notation with 16 bars in A major[/INST]``
X:1
T:My Jig in A major
M:6/8
L:1/4
K:A major
R:jig
|:AEE EDE|FAA FDE|AEE EDE|BdB FEE|
AEE EDE|FAA FDE|cBA BFA|BAF E3:|
|:EAa EFE|FAA FDE|EAa EFE|FAA FEE|
EAa EFE|FAA FDE|cBA BFA|BAF E3:|
``
```

This jig in A major consists of 16 bars and is written in 6/8 time signature. Enjoy playing it

on your instrument!

Note: The given example is just a suggestion, and you can modify it as you like. You can also



Generated Jig from from the finetune model. The base-step was manually changed to `L:1/8` .

```
<s>[INST]
Add chords to the following tune:
```
X:1
T:My Jig in Amajor
M:6/8
L:1/4
K:Amajor
R:jig
 |:AEE EDE|FAA FDE|AEE EDE|BdB FEE|
AEE EDE|FAA FDE|cBA BFA|BAF E3:|
 |:EAa EFE|FAA FDE|EAa EFE|FAA FEE|
EAa EFE|FAA FDE|cBA BFA|BAF E3:|
```
[/INST]```
X:1
T:My Jig in Amajor
M:6/8
L:1/4
K:Amajor
R:jig
 |: "A" AEE EDE| "G" FAA FDE| "A" AEE EDE| "D" BdB FEE|
 "A" AEE EDE| "G" FAA FDE| "A" cBA BFA| "D" BAF "A" E3:|
 |: "A" EAa EFE| "G" FAA FDE| "A" EAa EFE| "G" FAA FEE|
 "A" EAa EFE| "G" FAA FDE| "A" cBA BFA| "D" BAF "A" E3:|
```

### My Jig in Amajor

Chords added by the finetuned model to the previously generated Jig. Harmony is repetitive but appropriate given the style.

<s>[INST]Generate a variation of the following tune:

```

X:1
T:My Jig in Amajor
M:6/8
L:1/4
K:Amajor
R:jig
|:"A" AEE EDE|"G" FAA FDE|"A" AEE EDE|"D" BdB FEE|
"A" AEE EDE|"G" FAA FDE|"A" cBA BFA|"D" BAF "A" E3:|
|:"A" EAa EFE|"G" FAA FDE|"A" EAa EFE|"G" FAA FEE|
"A" EAa EFE|"G" FAA FDE|"A" cBA BFA|"D" BAF "A" E3:|

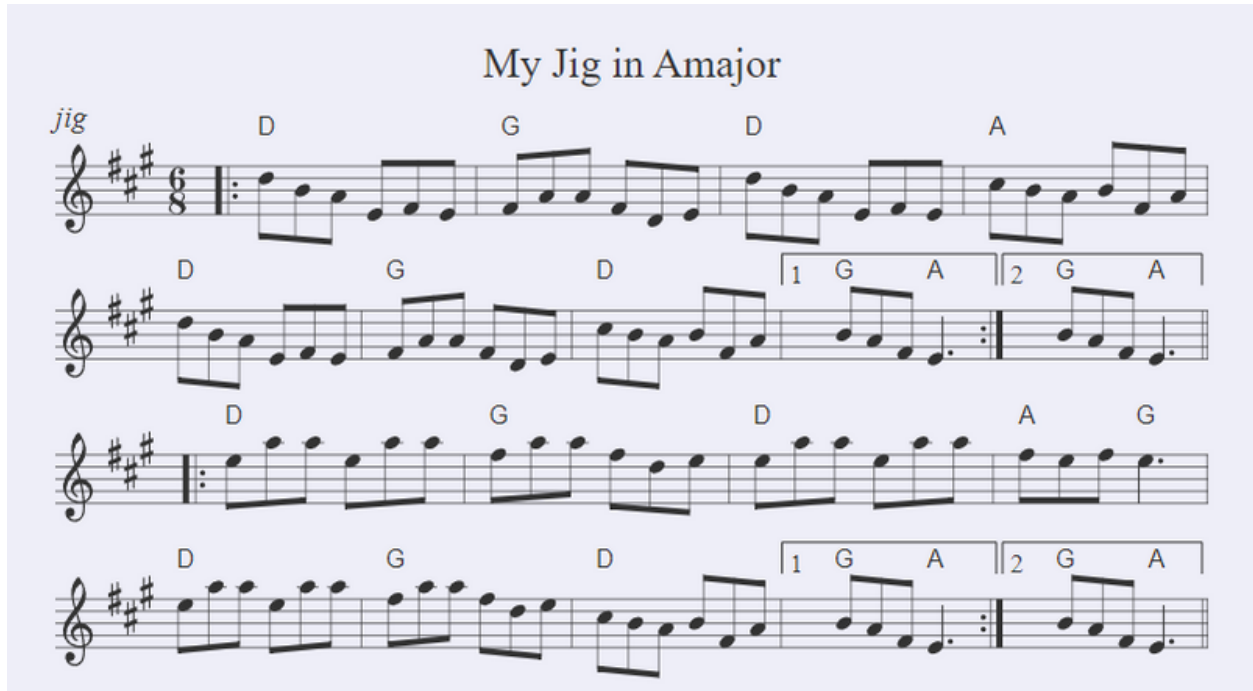
```

[/INST]`

```

X:1
T:My Jig in Amajor
M:6/8
L:1/4
K:Amajor
R:jig
|:"D" dBA EFE|"G" FAA FDE|"D" dBA EFE|"A" cBA BFA|
"D" dBA EFE|"G" FAA FDE|"D" cBA BFA|1 "G" BAF "A" E3:|2 "G" BAF "A" E3||
|:"D" eaa eaa|"G" faa fde|"D" eaa eaa|"A" fef "G" e3|
"D" eaa eaa|"G" faa fde|"D" cBA BFA|1 "G" BAF "A" E3:|2 "G" BAF "A" E3||

```



Variation on the previous tune generated by the model. The A-part features minor changes while the B-part is considerably different while recognizable melodic elements. First and second endings were added, albeit with identical notes. The harmony was also tweaked without compromising the tune.

## Discussion

Deciding if the capabilities of GPT-4 or any other LLM with comparable performance are inching towards artificial general intelligence is beyond the scope of this paper, but when it comes to musical intelligence, we have a difficult time seeing such “sparks”. However, we are not being dismissive of the potential LLMs have for enabling musical creativity. We will now discuss some crucial points pointing to both challenges and opportunities that arise in the application of LLMs to symbolic music generation and understanding tasks.

## Language as an interface

A famous quote, of uncertain attribution, states that “writing about music is like dancing about architecture”,<sup>5</sup> pointing to the unsuitability of language to meaningfully communicate musical concepts. Arguably, this is true for most other things that humans experience but the shortcomings of mapping our perception to words does not make it any less useful. As flawed as it might seem we have been “dancing about architecture” for a long time as we had the necessity to communicate something about music to each other. During this communication process, what is lost to words can be recovered with context and shared meaning can be built on the fly, through trial and error.

Likewise, when using LLMs as interfaces to other domains like music or images we inherit these flaws (which also compound with other algorithmic problems) but the interface is nonetheless useful [14]. And continued interaction results in a shared language and understanding being built, as the emergence of “prompt engineering” shows.

On the other hand, this interaction is also shaped by the interface. Using multimodal systems where language is the interface might subconsciously push users to generate only what language can express. Furthermore, language is everchanging and alive while these models are a static snapshot of language. While certain things might be picked up in-context during the interaction, there is no feedback process happening, and thus rather than building mutual understanding we have a one-way process where users become familiar with the “syntax” of a system.

## AI as a Service vs. Artistic Agency

Agency and control over the tools used is a major part of artistic practice. Yet, all the state-of-the-art LLMs are accessible only in the form of a service with a paid subscription. The commercial nature of these systems means they are shaped by the necessities of the most profitable user groups and that they are designed to minimize unwanted behaviors and controversy. The result is a *guardrailed* experience where model internals are hidden or inaccessible.

While exploring this interaction can be worthwhile in itself, it is arguably a limiting use of the technology. We speculate that while LLMs and AI become more and more of a product we will see two types of “AI artists”: a group that uses AI tools and products in service of their artistic vision in a similar way as one can today use a synthesizer or a computer to make something that would be classified as electronic music; a second group that engages with AI more actively and put this interaction at the center of their practice. The second group will care about full ownership and controllability of the models they use much more than the first and we believe there is a great research potential in investigating this interaction both on the scientific and artistic side.

## Challenges and Future Directions

The decision to go for qualitative test was motivated by the difficulty in setting up a standardize experiment that could account for all the different aspect of each model. Nonetheless, we see the creation of a standardized benchmark as a possible avenue for future research. Musical knowledge and generation are however nuanced and might prove difficult to reduce to a single metric, as there are many ways outputs could be appropriate or correct, making human evaluation and preference crucial.

Furthermore, we are aware that the choice of music theory is a limited form of testing as the capability of understanding and navigating these concepts is not a prerequisite for musical expression in humans. Future efforts should be directed at designing other types of tests and tasks as much as building a corpus of questions.

As suggested in [15], creation and understanding abilities arise separately in LLMs and differently than humans.

## Conclusions

Starting from the music exploration by Bubeck et al. [1], we investigated the musical capabilities of LLMs asking to generate symbolic music and to answer some music understanding and theory questions. It emerged quite clearly that only the larger state-of-the-art models are able to express musical knowledge somewhat reliably and that zero-shot generation of music in abc-notation is possible from a syntax standpoint — but that musical understanding is lacking.

We claim that most LLMs, even smaller ones, can still be a useful tool for music when adapted. Retrieval augmented generation was enough to make Mistral 7B capable of generating convincing music in abc-notation provided as little as 3 examples. Finetuning using QLoRA [13] further improved capabilities for musical tasks with only a few thousand examples. This computation is manageable with consumer grade hardware and the dataset can be programmatically built using MIR. We provided a toy example using abc-notated folk music, but the same approach is transferable to other style and formats.

We believe that LLMs bear a great potential for symbolic music generation and understanding given their strong in-context learning ability and the benefit of providing a natural interface for human interaction. AI for symbolic music could go through a change in paradigm where we move from specialized models to generic music language models. However, we must recognize that music is nothing more than an afterthought in the training and evaluation of systems like GPT-4. Much like what happened with models for coding (e.g. Code LLaMA [16]) specialized applications need specialized datasets for finetuning and benchmarks that build on top of existing LLMs. We envision a future where MIR and AI converge to tackle these challenges effectively.

## Acknowledgments

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## Ethics Statement

This work did not involve any human participants in any of the aforementioned testing. The authors have no conflict of interest with any of the commercial entities that develop and sell the aforementioned AI systems.

## Appendix

This appendix contains example outputs from all the model discussed in the paper.



## Questions

# question 1

How many flats/sharps are in the following keys?

- D minor
- E major
- Db major
- F# minor
- B# major
- Db minor

# question 2

Which key signatures feature the following number of flats or sharps:

- 5 flats
- 1 sharp
- 6 sharps
- 2 flats

# question 3

Write the notes in the following scales:

- A major
- F# minor
- G melodic minor
- Eb major
- Ab minor

# question 4

Considering the abc-notation standard where ` \_ ` means flat, ` ^ ` means sharp and ` = ` means natural, name the interval between each couple of notes:

- CB
- \_G\_B
- ^D=A
- ^FB

# question 4a (check if abc-notation makes a difference)

Name the interval between each couple of notes:

- C to B
- Gb to Bb
- D# to A
- F# to B

# question 5

What notes are in the following chords?

- A majore
- F augmented
- D minor
- E diminished

# question 6

Considering the abc-notation standard where ` \_ ` means flat, ` ^ ` means sharp and ` = ` means nat

ural, name each of the following chords: ``[\_Ac\_e]|[F\_Ac]|[EG\_B]|[\_Bdf]|[FA^c]``

Name each of the following chords:

- \_A, C, \_E
- F, \_A, C
- E, G, \_B
- \_B, D, F
- F, A, ^C

# question 6a

Name each of the following chords:

- Ab, C, Eb
- F, Ab, C
- E, G, Bb
- Bb, D, F
- F, A, C#

# question 7

Name the time signatures for each measure in the following snippets, considering L:1/8

```

|c4 c2||c2c ccc||c2cc zczc||c3 c3 c2 c2||

```

# question 8

Write a II-V-I in the following keys:

- D minor
- Bb minor
- A major
- G# major

# question 9

What seventh chords can be constructed on each scale degree of G minor?

## GPT-4 Output

# answer 1

- D minor : 1 flat
- E major : 4 sharps
- Db major: 5 flats
- F# minor: 3 sharps
- B# major: theoretical key with 12 sharps (usually we would refer to it as C major, which ha

s no sharps or flats)  
 - Db minor: 8 flats (usually we would refer to it as C# minor, which has 4 sharps)

# answer 2

- 5 flats: Db Major/ Bb minor
- 1 sharp: G Major/E minor
- 6 sharps: F# Major/D# minor
- 2 flats: Bb Major/G minor

# answer 3

- A major: A, B, C#, D, E, F#, G#, A
- F# minor: F#, G#, A, B, C#, D, E, F#
- G minor: G, A, Bb, C, D, Eb, F, G
- Eb major: Eb, F, G, Ab, Bb, C, D, Eb

# answer 4

- C and B: Major 7th
- \_G and \_B: Augmented 3rd
- ^D and =A: Perfect 4th
- ^F and B: Tridecimal neutral Third (or augmented third)

# answer 4a

- C to B: Major 7th
- Gb to Bb: Major 3rd
- D# to A: Perfect 5th
- F# to B: Perfect 4th

# answer 5

- A major: A, C#, E
- F augmented: F, A, C#
- D minor: D, F, A
- E diminished: E, G, Bb

# answer 6

- \_A, C, \_E: Ab minor
- F, \_A, C: F minor
- E, G, \_B: E minor
- \_B, D, F: Bb minor
- F, A, ^C: F augmented

# answer 6a

- Ab, C, Eb: Ab major
- F, Ab, C: F minor
- E, G, Bb: E diminished
- Bb, D, F: Bb major
- F, A, C#: F augmented

# answer 7

The time signature is 4/4.

# answer 8

- D minor: Em7 - A7 - Dm
- Bb minor: Cm7 - F7 - Bbm
- A major: Bm7 - E7 - Amaj7
- G# major: A#m7 - D#7 - G#maj7

# answer 9

- G minor: Gm7
- A diminished: Aø7
- Bb Major: BbMaj7
- C minor: Cm7
- D minor: Dm7
- E diminished: Eø7
- F Major: F7

## Gemini Output

# Can you compose a short tune (say four to eight bars) using ABC notation?  
 Absolutely! Here's a short and cheerful tune in C Major:

```\n

```

X:1
T: A Simple Melody
C: Traditional
M: 4/4
L: 1/8
K: C
CDEF | GGG A | CDEF | G2 z2 ||
```

```

**\*\*Let me explain what this means:\*\***

```

* **X:1** This identifies the tune's reference number.
* **T: A Simple Melody** The title of the piece.
* **C: Traditional** Indicates the composer is unknown (traditional).
* **M: 4/4** The meter is 4/4, meaning four beats per bar.
* **L: 1/8** The default note length is an eighth note.
* **K: C** The key signature is C Major.
* **Notes:**
 * The letters (C D E F G A) represent the musical notes.
 * 'z' represents a rest.
 * Numbers after a note (like G2) indicate an octave change.
* **Bars:** Vertical lines (|) separate the measures (bars).

```

**\*\*How to Hear This:\*\***

There are a few ways to turn ABC notation into music:

\* **\*\*Online converters:\*\*** Websites like [<http://abcjs.net/>](<http://abcjs.net/>) will render ABC

notation into a playable tune with a visual representation.

\* **Music Software:** Software like MuseScore can input ABC notation and play the tune for yo

u.

Let me know if you'd like a longer tune, in a different key, or a different mood!

# add another 8 bar section to the tune

Certainly! Here's an 8-bar section that complements the original tune:

```
```\nX:1\nT: A Simple Melody\nC: Traditional\nM: 4/4\nL: 1/8\nK: C\nCDEF | GGG A | CDEF | G2 z2 ||\nGABA | BCDE | F2 F2 | G2 z2 ||\n```\n
```

****New Section Breakdown:****

* ****Harmony:**** It maintains the simplicity of the first section while adding a bit of variati

on through the use of chords implied by the melody.

* **Rhythm:** It keeps the same rhythmic feel, making the transition smooth.

Together: When played back-to-back, you have a charming little 16-bar melody.

Tips:

* **Experiment:** Play around with melodies, chord changes, and even different keys.

* **ABC Notation Resources:** Look online for tutorials and examples to deepen your understa

ending of ABC notation.

Let me know if you want further variations or a completely new direction!

Can you describe the tune in musical terms?

Absolutely! Here's a description of the tune in musical terms:

****Overall Character:****

* ****Simple and Cheerful:**** The melody has a straightforward, uncomplicated nature that evokes

a sense of lightheartedness.

* **Folk-like:** Its simple structure and use of mainly stepwise motion give it a traditional

folk song quality.

****Melodic Elements:****

* ****Motifs:**** The tune utilizes short melodic ideas that repeat and vary. For instance, the "

GGG A" pattern in the first section.

* **Stepwise Motion:** The melody primarily moves by step (adjacent notes in the scale), making

ng it easy to sing and follow.

* **Range:** The melody stays within a moderate range, rarely jumping large intervals.

Harmonic Elements:

* **Major Key:** The tune is in C Major, giving it a bright and optimistic sound.

* **Implied Chords:** While no explicit chords are written, the melody suggests basic chord p

progressions in C Major, likely centered around the I (C), IV (F), and V (G) chords.

****Rhythmic Elements****

* ****Simple Meter:**** The tune is in 4/4 time, one of the most common and straightforward time

signatures.

* **Steady Beat:** The rhythm primarily uses eighth notes and rests, creating a regular and u

ncomplicated rhythmic feel

**Let me know if you'd like an even more detailed analysis, or if you have specific aspects o

f the tune you'd like me to focus on!**

I like part B, but maybe part A is just a bit too repetitive. How about rewriting the A par

t to contain an arpeggio?

Definitely! Let's add an arpeggiated feel to Part A for some variation. Here's a revised ver

sion:

```

X:1

T: A Simple Melody (Revised)

C: Traditional

M: 4/4

L: 1/8

K: C

C2 EC | D2 DG | CDEF | G2 z2 ||

GABA | BCDE | F2 F2 | G2 z2 ||

```

****Changes:****

* ****Arpeggio:**** The first two bars now outline a broken C Major chord (C-E-G-C-D-G). This ad

ds a bit of rhythmic and melodic movement compared to the original part.

* **Maintaining Simplicity:** The change stays true to the overall simplicity of the melody.

The Benefits:

* **Contrast:** The arpeggio gives Part A a slightly different feel, nicely contrasting with

the stepwise motion of Part B.

* **Flow:** The arpeggio introduces a sense of upward movement that leads nicely into Part B.

Further Tweaking: If you find it still a bit repetitive, you could play with different r

hythms within the arpeggio or slightly vary the notes chosen.

Let me know if you have other changes in mind!

how about making this into a duet, can you add a second staff for this with a bass accompan

ying the melody?

Absolutely! Here's the revised tune with an added bassline for a duet format:

```

X:1

T: A Simple Melody (Duet)

C: Traditional

M: 4/4

L: 1/8

K: C

[V1:C2 EC | D2 DG | CDEF | G2 z2 |]  
 [V2:C, C, | G, G, | C, C, | G, G, |]  
 [V1:GABA | BCDE | F2 F2 | G2 z2 |]  
 [V2:G, G, | C, E, | F, F, | C, z2 |]  
 ````

****Explanation:****

* **V1 and V2:** I've used "V1" for the melody (voice 1) and "V2" for the bass accompaniment

(voice 2).

* **Simple Bassline:** The bassline focuses on the root notes of the implied chords, providi

ng a solid harmonic foundation.

* **Rhythmic Variety:** The bassline uses a mix of quarter notes and half notes to add some

rhythmic interest against the melody.

****Tips for Performance:****

* ****Balance:**** The bass should support the melody, not overpower it. Adjust volumes according

ly.

* **Articulation:** Keep the melody line flowing, while the bass notes can be played with a

slightly heavier touch and shorter duration.

****Customization:****

* ****Chords:**** You could experiment with simple inversions of the chords in the bass part (e.

g., instead of C,, try, E, C,)

* **Rhythmic Variation:** Introduce slight rhythmic variations in the bass to add more interp

lay with the melody.

Let me know if you'd like a more complex bassline, or adjustments to fit a specific musical s

tyle!

question 1

How many flats/sharps are in the following keys?

- D minor
- E major
- Db major
- F# minor
- B# major
- Db minor

Absolutely! Here's a more professional presentation of the key signature information:

Key Signature Analysis

Key	Key Signature
D minor	1 flat (Bb)
E major	4 sharps (F#, C#, G#, D#)
Db major	5 flats (Bb, Eb, Ab, Db, Gb)
F# minor	3 sharps (F#, C#, G#)
B# major	5 sharps (F#, C#, G#, D#, A#)
Db minor	5 flats (Bb, Eb, Ab, Db, Gb)

Key Points

Major and minor keys with the same key signature are relative. For example, D minor is the re

relative minor of F major (which also has one flat).
The Circle of Fifths is a valuable tool for determining key signatures. Moving clockwise adds

sharps, while moving counter-clockwise adds flats.

Order of sharps and flats:

Sharps: F, C, G, D, A, E, B

Flats: B, E, A, D, G, C, F

Let me know if you would like a more detailed explanation of the Circle of Fifths or other mu

sic theory concepts!

question 2

Which key signatures feature the following number of flats or sharps:

- 5 flats
- 1 sharp
- 6 sharps
- 2 flats
- 7 flats

Here's the breakdown of key signatures based on the number of flats or sharps:

5 flats

Major: D \flat major

Minor: B \flat minor

1 sharp

Major: G major

Minor: E minor

6 sharps

Major: F \sharp major

Minor: D \sharp minor

2 flats

Major: B \flat major

Minor: G minor

7 flats

Major: C \flat major

Minor: A \flat minor

Remember:

To easily find key signatures, use the Circle of Fifths.

Major and minor keys sharing the same key signature are called "relative" keys.

Let me know if you want me to elaborate on any of these concepts!

question 3

Write the notes in the following scales:

- A major
- F \sharp minor
- G melodic minor
- E \flat major
- A \flat minor

Absolutely! Here are the scales you requested:

A Major

A - B - C \sharp - D - E - F \sharp - G \sharp

F \sharp Minor

F \sharp - G \sharp - A - B - C \sharp - D - E

G Melodic Minor (Ascending)

G - A - B - C - D - E - F \sharp

Important Note: Melodic minor scales change when descending. The 6th and 7th notes are lowere

d to their natural form.

G Melodic Minor (Descending)
G - F - Eb - D - C - Bb - A

Eb Major
Eb - F - G - Ab - Bb - C - D

Ab Minor
Ab - Bb - Cb - Db - Eb - Fb - Gb

Note: Cb and Fb are enharmonically equivalent to B and E respectively, but are used in the Ab

minor scale to adhere to the rule of using one of each letter name.

question 4

Considering the abc-notation standard where `_` means flat, `^` means sharp and `=` means natural, name the interval between each couple of notes:

- C B
- _G _B
- ^D =A
- ^F B

Absolutely! Here's the breakdown of intervals using ABC notation:

C B: Minor Second (or half step)
 _G _B: Minor Third (or three half steps)
 ^D =A: Perfect Fifth (or seven half steps)
 ^F B: Perfect Fourth (or five half steps)
 Let's break it down:

_G _B means "G flat" and "B flat"

^D =A means "D sharp" and "A natural"

^F B means "F sharp".

Let me know if you'd like more examples or a deeper explanation of intervals!

question 4a

Name the interval between each couple of notes:

- C to B
- Gb to Bb
- D# to A
- F# to B

Absolutely! Here's the breakdown of the intervals:

C to B: Minor seventh
 Gb to Bb: Minor third
 D# to A: Diminished fifth
 F# to B: Major fourth
 Explanation:

Minor seventh: This interval spans 10 semitones (half-steps).

Minor third: This interval spans 3 semitones.

Diminished fifth: This interval is one semitone smaller than a perfect fifth, making it 6 sem

itones wide.
Major fourth: This interval spans 5 semitones.
Let me know if you'd like more examples or explanations!

question 5
What notes are in the following chords?
- A major
- F augmented
- D minor
- E diminished
Here's the breakdown of the notes in each chord:

A major:

Root: A
Major Third: C#
Perfect Fifth: E
F augmented:

Root: F
Major Third: A
Augmented Fifth: C#
D minor:

Root: D
Minor Third: F
Perfect Fifth: A
E diminished:

Root: E
Minor Third: G
Diminished Fifth: Bb
Let me know if you want the notes for more complex chords!

question 6
Considering the abc-notation standard where `_` means flat, `^` means sharp and `=` means nat

ural, name each of the following chords:

[_Ac_e] | [F_Ac] | [EG_B] | [_Bdf] | [FA^c]

Here's the breakdown of the chords using ABC notation:

[_Ac_e] Eb minor (Eb, Gb, Bb)

[F_Ac] D minor (D, F, A)

[EG_B] G major (G, B, D)

[_Bdf] Bb minor (Bb, Db, F)

[FA^c] F major (F, A, C#)

Let me know if you'd like more chord identification practice!

question 6a

Name each of the following chords:

- Ab, C, Eb

- F, Ab, C

- E, G, Bb

- Bb, D, F

- F, A, C#

Absolutely! Here's the identification of those chords:

Ab, C, Eb: Ab major

F, Ab, C: F minor

E, G, Bb: Eb minor

Bb, D, F: Bb major

F, A, C#: F major

Let me know if you'd like more chord identification challenges!

question 7

Name the time signatures for each measure in the following snippets, considering L:1/8

|c4 c2||c2c ccc||c2cc zczc||c3 c3 c2 c2||

Here's the breakdown of the time signatures, considering L:1/8 (which means the eighth note g

ets one beat):

Measure 1: |c4 c2 ||
 Has 6 eighth notes (beats) -> 6/8 time (You could simplify this to 3/4)
 Measure 2: |c2c ccc ||
 Has 8 eighth notes (beats) -> 8/8 time (Or simplified, 4/4)
 Measure 3: |c2cc zczc ||
 Has 8 eighth notes (beats) -> 8/8 time (Or simplified, 4/4)
 Measure 4: |c3 c3 c2 c2 ||
 Has 8 eighth notes (beats) -> 8/8 time (Or simplified, 4/4)
 Important Notes:

The "L:1/8" declaration is key to understanding the time signatures.
 While some measures could technically be written in simpler time signatures (like 3/4 or 4/4)
 Let me know if you have more time signature analysis you'd like help with!

question 8

Write a II-V-I in the following keys:

- D minor
- Bb minor
- A major
- G# major

Absolutely! Here are the II-V-I progressions in the requested keys:

D minor

II: Em7b5 (E - G - Bb - D)
 V: A7 (A - C# - E - G)
 I: Dm (D - F - A)
 Bb minor

II: Cm7b5 (C - Eb - Gb - Bb)
 V: F7 (F - A - C - Eb)
 I: Bbm (Bb - Db - F)
 A major

II: Bm7 (B - D - F# - A)
 V: E7 (E - G# - B - D)
 I: Amaj7 (A - C# - E - G#)
 G# major

II: A#m7b5 (A# - C# - E# - G#)
 V: E7 (E - G# - B - D)
 I: G#maj7 (G# - B# - D# - F##)

Note: In G# major, F## (F double sharp) is used to maintain the correct intervallic relations

Let me know if you'd like II-V-I progressions in other keys or variations on this classic pro

question 9

What seventh chords can be constructed on each scale degree of G minor?

Here's a breakdown of the seventh chords you can build on each scale degree of G minor, along

Natural Minor Scale Degrees and Chords

I: Gm7 (G - Bb - D - F) - minor seventh
 II: Am7b5 (A - C - Eb - G) - half-diminished seventh
 III: Bbmaj7 (Bb - D - F - Ab) - major seventh
 IV: Cm7 (C - Eb - G - Bb) - minor seventh
 V: Dm7 (D - F - A - C) - minor seventh
 VI: Ebmaj7 (Eb - G - Bb - D) - major seventh
 VII: F7 (F - A - C - Eb) - dominant seventh
 Important Notes:

The G natural minor scale provides the foundation for these chords.

Seventh chords add another note (a seventh above the root) to basic triads, creating richer h
 Harmonic Minor Considerations

If you use the G harmonic minor scale (which raises the 7th degree to D#), the VII chord beco
 Let me know if you'd like to explore seventh chords in other scales or delve deeper into thei

Mistral Chat Output

Can you compose a short tune (say four to eight bars) using ABC notation?

Sure, I'd be happy to help with that. ABC notation is a simple text-based system to notate mu

sic. Here's a simple tune in the key of C major:

```

X:1

T:My Simple Tune

M:4/4

L:1/4

K:C

C D E F | G2 G2 | A B c d | e2 e2 |

f g a b | c'2 c'2 | b a g f | e4 ||

```

This tune starts with a ascending C major scale, then descends back down. Each bar is separat

ed by "|". The "||" at the end signifies the end of the tune.

add another 8 bar section to the tune

Certainly! Here's an additional 8-bar section to the tune that introduces some new notes and

rhythmic variations:

```vbnet

X:1

T:My Simple Tune

M:4/4

L:1/4

K:C

C D E F | G2 G2 | A B c d | e2 e2 |  
f g a b | c'2 c'2 | b a g f | e4 ||

g2 g2 | f e d c | B A G F | E2 E2 |  
D D D D | E E E E | F F F F | G4 ||

In this new section, I've introduced some repeated notes and a descending scale pattern in th

e first two bars. The third bar features a descending arpeggio from B down to F, and the four

th bar has two repeated E notes followed by two F notes and two G notes. The final bar is a s

imple G note held for four beats to give a sense of resolution to the piece.

# Can you describe the tune in musical terms?

Sure, I'd be happy to describe the tune in musical terms!

The tune is in the key of C major, which is a common and popular key for folk music. The time

signature is 4/4, which means there are four beats per measure and the quarter note gets the

beat.

The first section of the tune features a simple melody that follows the C major scale up and

down. It starts with the tonic note C and ascends stepwise to the fifth scale degree G, then



descends back down to the tonic. The melody then ascends again, this time to the octave C, be

fore descending back down to the fifth scale degree G. This creates a sense of balance and sy

mmetry in the melody.

The second section of the tune introduces some new notes and rhythmic variations. The melody

starts with a repeated G note, which creates a sense of tension and anticipation. This is fol

lowed by a descending scale pattern that leads down to the tonic note C. The melody then intr

oduces an arpeggio pattern that descends from B down to F, which creates a sense of harmonic

movement and interest. Finally, the melody features a series of repeated notes on the dominan

t pitch D, leading up to a series of repeated notes on E and F, before resolving to a G note



held for four beats to end the tune.

Overall, the tune is a simple and catchy melody that features some common elements of folk mu

sic, such as a clear tonal center, a repetitive melody, and a straightforward rhythmic struct

ure.

# I like part B, but maybe part A is a bit boring. Can you rewrite it to use different interv

als?

Of course! Here's a revised version of Part A that uses different intervals to create a more

interesting melody:

```vbnet

X:1

T:My Simple Tune

M:4/4

L:1/4

K:C

C E G c | e2 e2 | d B G E | C2 C2 |
F A c f | a2 a2 | g e c B | A4 ||

g2 g2 | f e d c | B A G F | E2 E2 |
D D D D | E E E E | F F F F | G4 ||

In this revised version of Part A, I've used a mix of intervals to create a more varied melod

y. The first bar features a C major chord in arpeggiated form, followed by a leap up to the f

ifth scale degree G. The melody then descends stepwise to the tonic note C. The second bar in

troduces a new interval, the minor third, with a leap down from E to C. The melody then desce

nds stepwise to the fifth scale degree G.

The third bar introduces another new interval, the major sixth, with a leap up from C to A. T

he melody then descends stepwise to the tonic note C. The fourth bar features a repeated C no

te, followed by a leap up to the third scale degree E and a stepwise descent back down to C. Overall, this revised version of Part A features a more varied and interesting melody that us

es a mix of intervals to create a sense of movement and flow. The melody still follows the ba

sic structure of the original version, with a balanced and symmetrical structure that leads i

nto Part B.

How about making this into a duet, can you add a second staff for this with a bass accompan

ying the melody?

Sure, I'd be happy to add a second staff for a bass accompaniment to the melody! Here's a ver

sion of the tune with a bass line added:

```
```vbnet
```

```
X:1
```

```
T:My Simple Tune
```

```
M:4/4
```

```
L:1/4
```

```
K:C
```

```
V:1 name="Melody" clef=treble
```

```
C E G c | e2 e2 | d B G E | C2 C2 |
```

```
F A c f | a2 a2 | g e c B | A4 ||
```

```
g2 g2 | f e d c | B A G F | E2 E2 |
```

```
D D D D | E E E E | F F F F | G4 ||
```

```
V:2 name="Bass" clef=bass middle=D
```

```
C,2 C,2 | G,2 G,2 | C,2 C,2 | G,2 G,2 |
```

```
C,2 C,2 | G,2 G,2 | C,2 C,2 | G,2 G,2 ||
```

```
C,2 C,2 | G,2 G,2 | C,2 C,2 | G,2 G,2 |
```

```
C,2 C,2 | G,2 G,2 | C,2 C,2 | G,2 G,2 ||
```

In this version, I've added a second staff for the bass line, which is written in bass clef.



The bass line is quite simple and follows the root of each chord in the melody. In the first

section of the tune, the bass line alternates between C and G, which are the I and V chords i

n the key of C major. In the second section of the tune, the bass line continues to alternate

between C and G, providing a steady harmonic foundation for the melody.

Overall, this version of the tune features a simple and effective bass line that supports the

melody and helps to create a sense of harmony and structure. The bass line could be played by

a variety of instruments, such as a cello, double bass, or bass guitar.

-----

# question 1

How many flats/sharps are in the following keys?

- D minor
- E major
- Db major
- F# minor
- B# major
- Db minor

Sure, I'd be happy to help with that!

D minor: D minor has one flat in its key signature, which is B flat.

E major: E major has four sharps in its key signature: F sharp, C sharp, G sharp, and D sharp

.

Db major: Db major has five flats in its key signature: B flat, E flat, A flat, D flat, and G

flat.

F# minor: F# minor has three sharps in its key signature: F sharp, C sharp, and G sharp.

B# major: B# major is a theoretical key with nine sharps in its key signature, but it's not t



ypically used in practice because it's enharmonically equivalent to C major (which has no sha

rps or flats).

Db minor: Db minor has five flats in its key signature: B flat, E flat, A flat, D flat, and G

flat.

# question 2

Which key signatures feature the following number of flats or sharps:

- 5 flats
- 1 sharp
- 6 sharps
- 2 flats
- 7 flats

Here are the key signatures that correspond to the given number of flats and sharps:

5 flats: The key signature with 5 flats is B flat major (or its relative minor, G minor).

1 sharp: The key signature with 1 sharp is G major (or its relative minor, E minor).

6 sharps: The key signature with 6 sharps is F sharp major (or its relative minor, D sharp mi

nor).

2 flats: The key signature with 2 flats is B flat major (or its relative minor, G minor).

7 flats: The key signature with 7 flats is C flat major (or its relative minor, A flat minor)

. Note that C flat major is enharmonically equivalent to B major, which has 5 sharps in its k

ey signature. However, in terms of flats, it's written as C flat major.

# question 3

Write the notes in the following scales:

- A major
- F# minor
- G melodic minor
- Eb major
- Ab minor

Sure, here are the notes in each of the requested scales:

A major: A, B, C#, D, E, F#, G#

F# minor (natural minor): F#, G#, A, B, C#, D, E

G melodic minor (ascending): G, A, Bb, C, D, E, F#; (descending): G, F, Eb, D, C, Bb, A

Eb major: Eb, F, G, Ab, Bb, C, D

Ab minor (natural minor): Ab, Bb, Cb (or B), Db, Eb, F, Gb (or F#)

Note that in the G melodic minor scale, the ascending and descending forms have different notes

es. Also, in the Ab minor scale, Cb and Gb are enharmonically equivalent to B and F#, respect

ively, but are typically written as flats in this context.

# question 4

Considering the abc-notation standard where `\_` means flat, `^` means sharp and `=` means natural,

name the interval between each couple of notes:

- C B
- \_G \_B
- ^D =A
- ^F B

In each of the given pairs of notes, I'll name the interval, taking into account the accident



als:

C to B: This is a major seventh (C to B natural is a seventh, and B natural is a major sevent

h above C).

\_G to \_B: This is a minor third (\_G to B natural is a diminished fourth, but \_B is a half ste

p higher than B natural, making it a minor third).

^D to =A: This is an augmented fourth (D to A natural is a fourth, and ^D is a half step high

er than D natural, while  $\sharp A$  is the same as A natural, making it an augmented fourth).  
 $\sharp F$  to B: This is a minor sixth (F to B natural is a sixth, and  $\sharp F$  is a half step higher than

F natural, making it a minor sixth).

# question 4a

Name the interval between each couple of notes:

- C to B
- Gb to Bb
- D# to A
- F# to B

In each of the given pairs of notes, I'll name the interval:

C to B: This is a major seventh (C to B natural is a seventh, and B natural is a major seventh)

h above C).

G $\flat$  to B $\flat$ : This is a minor third (G to B natural is a diminished fourth, but G $\flat$  is a half step

lower than G natural, and Bb is a half step lower than B natural, making it a minor third).  
D# to A: This is an augmented fourth (D to A natural is a fourth, and D# is a half step high

r than D natural, while A is the same as A natural, making it an augmented fourth).  
F# to B: This is a minor sixth (F to B natural is a sixth, and F# is a half step higher than



F natural, making it a minor sixth).

# question 5

What notes are in the following chords?

- A major
- F augmented
- D minor
- E diminished

Here are the notes in each of the given chords:

A major: A, C#, E

F augmented: F, A, C#

D minor: D, F, A

E diminished: E, G, Bb

# question 6

Considering the abc-notation standard where `\_` means flat, `^` means sharp and `` means nat

ural, name each of the following chords:

`[_Ac_e] | [F_Ac] | [EG_B] | [_Bdf] | [FA^c]`

Here are the names of each of the given chords in abc notation:

`[_Ac_e]`: This is an A flat major chord (A flat, C, E flat).

`[F_Ac]`: This is an F minor chord (F, A flat, C).

`[EG_B]`: This is an E minor chord (E, G, B).

`[_Bdf]`: This is a B flat diminished chord (B flat, D flat, F). Note that D flat is enharmonic

ally equivalent to C sharp, but in this context, it's written as D flat.

[FA^c]: This is an F augmented chord (F, A, C sharp).

# question 6a

Name each of the following chords:

- Ab, C, Eb
- F, Ab, C
- E, G, Bb
- Bb, D, F
- F, A, C#

Here are the names of each of the given chords:

Ab, C, Eb: This is an A flat major chord.

F, Ab, C: This is an F minor chord.

E, G, Bb: This is an E minor chord.

Bb, D, F: This is a B flat major chord.

F, A, C#: This is an F augmented chord.

# question 7

Name the time signatures for each measure in the following snippets, considering L:1/8

```

|c4 c2||c2c ccc||c2cc zczc||c3 c3 c2 c2||

```

In each measure, I'll count the number of eighth notes (or their equivalent) and use that to

determine the time signature, assuming that each measure is complete and that L:1/8 indicates

c4 c2: This measure contains  $4 + 2 = 6$  eighth notes, so the time signature is 6/8.  
 c2c ccc: This measure contains  $2 + 1 + 3 = 6$  eighth notes, so the time signature is 6/8.  
 c2cc zczc: This measure contains  $2 + 2 + 1 + 1 = 6$  eighth notes, so the time signature is 6/8  
 c3 c3 c2 c2: This measure contains  $3 + 3 + 2 + 2 = 10$  eighth notes, so the time signature is 10/8.  
 Therefore, the time signatures for each measure are 6/8, 6/8, 6/8, and 10/8, respectively.

# question 8

Write a II-V-I in the following keys:

- D minor
- Bb minor
- A major
- G# major

Here are II-V-I progressions in each of the given keys:

D minor:

II: E minor 7 (E, G, B, D)

V: A7 (A, C#, E, G)

I: D minor (D, F, A)

Bb minor:

II: C minor 7 (C, Eb, G, Bb)

V: F7 (F, A, C, Eb)

I: Bb minor (Bb, Db, F)

A major:

II: B minor 7 (B, D, F#, A)

V: E7 (E, G#, B, D)

I: A major (A, C#, E)

G# major:

II: A# minor 7 (A#, C#, E, G#)

V: D#7 (D#, Fx, A#, C#) (Note: Fx is enharmonically equivalent to Gb, but in this context, it

I: G# major (G#, B#, D#)

# question 9

What seventh chords can be constructed on each scale degree of G minor?

To determine the seventh chords that can be constructed on each scale degree of G minor, we'll

The G natural minor scale contains the following notes:

G, A, Bb, C, D, Eb, F

Here are the seventh chords built on each scale degree:

G minor 7: G, Bb, D, F

A diminished 7: A, C, Eb, Gb (Note: Gb is enharmonically equivalent to F#, but in this context

Bb major 7: Bb, D, F, Ab

C minor 7: C, Eb, G, Bb

D minor 7: D, F, A, C

Eb major 7: Eb, G, Bb, D

F major 7: F, A, C, E

Therefore, these are the seventh chords that can be constructed on each scale degree of G min

## Claude 3 Output

# Can you compose a short tune (say four to eight bars) using ABC notation?

Sure! Here's a simple 8-bar tune in ABC notation:

X:1

T:Simple Tune

M:4/4

L:1/4

K:C

|: GGAG | E2EG | GGAG | E4 |

GGAG | E2EG | GGAG | E4 :|

This tune is in the key of C major and has a 4/4 time signature. It consists of two similar 4

-bar phrases, each ending with a whole note on E. The melody primarily uses the notes G, A, a

nd E.

You can copy and paste this ABC notation into an ABC player or converter to hear what it sounds like.

ds like or to see the sheet music representation.

# add another 8 bar section to the tune

Sure! Here's the tune with an additional 8-bar section:

X:1

T:Simple Tune

M:4/4

L:1/4

K:C

|: GGAG | E2EG | GGAG | E4 |

GGAG | E2EG | GGAG | E4 :|

|: C2CC | D2DD | E2EE | D4 |

C2CC | D2DD | E2EE | C4 :|

The new 8-bar section introduces a contrasting melody using the notes C, D, and E. This secti

on also consists of two similar 4-bar phrases, with the first phrase ending on a whole note D



and the second phrase ending on a whole note C.  
The entire tune now has an "AABB" structure, with each letter representing an 8-bar section.

This structure is common in many traditional and folk tunes.

# Can you describe the tune in musical terms?

Certainly! Here's a musical description of the tune:

Form: The tune has an "AABB" structure, meaning it consists of two distinct 8-bar sections (A

and B), each played twice.

Key: The tune is in the key of C major.

Time Signature: The tune has a 4/4 time signature, also known as common time, which means the

re are four quarter notes in each bar.

Melody:

- Section A: The melody in this section primarily uses the notes G, A, and E. It starts with

a descending G-A-G motif, followed by two E notes and then repeats the G-A-G motif before end

ing the phrase with a whole note E. This 4-bar phrase is repeated twice to complete the 8-bar

section.

- Section B: This section introduces a new melody using the notes C, D, and E. The melody asc

ends stepwise from C to D to E, with each note being repeated twice. The first phrase ends on



a whole note D, while the second phrase ends on a whole note C. Like section A, this 4-bar ph

rase is repeated twice to complete the

# I like part B, but maybe part A is a bit boring. Can you rewrite it to use different interv

als?

Sure! Here's a revised version of the tune with a more interesting part A:

X:1

T:Simple Tune

M:4/4

L:1/4

K:C

|: G2GA | B2Bd | c2cB | A4 |

G2GA | B2Bd | c2cB | A4 :|

|: C2CC | D2DD | E2EE | D4 |

C2CC | D2DD | E2EE | C4 :|

In this revised version, part A now features a wider range of notes and intervals:

- The first bar starts with a G, followed by two ascending notes (G and A), then a B.
- The second bar has two B notes, followed by a descending interval from B to D.
- The third bar features a C, repeated twice, followed by a descending interval from C to B.
- The fourth bar is a whole note A.

This new melody in part A creates a more engaging and varied sound, with a mix of stepwise mo

tion and larger intervals. The ascending and descending intervals add a sense of

# How about making this into a duet, can you add a second staff for this with a bass accompan

ying the melody?

Certainly! Here's the tune as a duet with a bass accompaniment:

X:1

T:Simple Tune

M:4/4

L:1/4

K:C

V:1 clef=treble

V:2 clef=bass

```
[V:1] |: G2GA | B2Bd | c2cB | A4 |
[V:2] |: C2E2 | D2G,2 | E2A,2 | F,4 |
[V:1] G2GA | B2Bd | c2cB | A4 :|
[V:2] C2E2 | D2G,2 | E2A,2 | F,4 :|
[V:1] |: C2CC | D2DD | E2EE | D4 |
[V:2] |: C,2C2 | B,2B,2 | A,2A,2 | G,4 |
[V:1] C2CC | D2DD | E2EE | C4 :|
[V:2] C,2C2 | B,2B,2 | A,2A,2 | C,4 :|
```

In this duet arrangement:

- The first voice (V:1) plays the melody in the treble clef, as written in the previous exam

le.

- The second voice (V:2) plays the bass accompaniment in the bass clef.

The bass accompaniment:

- Part A: The bass plays a simple harmonic progression, starting with a C in the first bar, f

ollowed by D, E, and F in the subsequent bars. This progression outlines the ...

# question 1

How many flats/sharps are in the following keys?

- D minor
- E major
- Db major
- F# minor
- B# major
- Db minor

Great! Let's go through each key and determine the number of flats or sharps.

1. D minor: This key has one flat (B $\flat$ ).
2. E major: This key has four sharps (F $\sharp$ , C $\sharp$ , G $\sharp$ , and D $\sharp$ ).
3. Db major: This key has five flats (B $\flat$ , E $\flat$ , A $\flat$ , D $\flat$ , and G $\flat$ ).
4. F# minor: This key has three sharps (F $\sharp$ , C $\sharp$ , and G $\sharp$ ).
5. B# major: This is an enharmonic equivalent to C major, which has no flats or sharps. However,

r, if written as B $\sharp$  major, it would theoretically have seven sharps (F $\sharp$ , C $\sharp$ , G $\sharp$ , D $\sharp$ , A $\sharp$ , E $\sharp$ , and



d B#).

6. D $\flat$  minor: This key has five flats (B $\flat$ , E $\flat$ , A $\flat$ , D $\flat$ , and G $\flat$ ), just like its relative major key

, D $\flat$  major.

To summarize:

- D minor: 1 flat
- E major: 4 sharps
- D $\flat$  major: 5 flats
- F $\sharp$  minor: 3 sharps
- B $\sharp$  major: 7 sharps (theoretically)
- D $\flat$  minor: 5 flats

# question 2

Which key signatures feature the following number of flats or sharps:

- 5 flats
- 1 sharp
- 6 sharps
- 2 flats
- 7 flats

Great! Let's identify the key signatures that feature the given number of flats or sharps.

1. 5 flats:

- D $\flat$  major
- B $\flat$  minor

2. 1 sharp:

- G major
- E minor

3. 6 sharps:

- F $\sharp$  major
- D $\sharp$  minor

4. 2 flats:

- B $\flat$  major
- G minor

5. 7 flats:

- C $\flat$  major (enharmonic equivalent to B major)
- A $\flat$  minor

To summarize:

- 5 flats: D $\flat$  major and B $\flat$  minor
- 1 sharp: G major and E minor
- 6 sharps: F $\sharp$  major and D $\sharp$  minor
- 2 flats: B $\flat$  major and G minor
- 7 flats: C $\flat$  major (enharmonic equivalent to B major) and A $\flat$  minor

# question 3

Write the notes in the following scales:

- A major
- F $\sharp$  minor
- G melodic minor
- E $\flat$  major
- A $\flat$  minor

Great! Let's write out the notes for each of the requested scales.

1. A major:

A - B - C $\sharp$  - D - E - F $\sharp$  - G $\sharp$  - A

2. F $\sharp$  minor (natural minor):

F $\sharp$  - G $\sharp$  - A - B - C $\sharp$  - D - E - F $\sharp$

3. G melodic minor:

Ascending: G - A - B $\flat$  - C - D - E - F $\sharp$  - G

Descending: G - F - E $\flat$  - D - C - B $\flat$  - A - G

4. E $\flat$  major:

E $\flat$  - F - G - A $\flat$  - B $\flat$  - C - D - E $\flat$

5. A $\flat$  minor (natural minor):

A $\flat$  - B $\flat$  - C $\flat$  - D $\flat$  - E $\flat$  - F $\flat$  - G $\flat$  - A $\flat$

To summarize:

- A major: A - B - C $\sharp$  - D - E - F $\sharp$  - G $\sharp$  - A
- F $\sharp$  minor (natural): F $\sharp$  - G $\sharp$  - A - B - C $\sharp$  - D - E - F $\sharp$
- G melodic minor (ascending): G - A - B $\flat$  - C - D - E - F $\sharp$  - G
- G melodic minor (descending): G - F - E $\flat$  - D - C - B $\flat$  - A - G
- E $\flat$  major: E $\flat$  - F - G - A $\flat$  - B $\flat$  - C - D - E $\flat$
- A $\flat$  minor (natural): A $\flat$  - B $\flat$  - C $\flat$  - D $\flat$  - E $\flat$  - F $\flat$  - G $\flat$  - A $\flat$

# question 4

Considering the abc-notation standard where `\_` means flat,  
`^` means sharp and `` means natural,  
name the interval between each couple of notes:

- C B
- \_G \_B
- ^D =A
- ^F B

Great! Let's identify the intervals between each pair of notes using the abc-notation standar

d.

1. C B:

The interval from C to B is a major seventh (M7).

2.  $\flat G \flat B$  ( $G\flat B\flat$ ):

The interval from  $G\flat$  to  $B\flat$  is a minor third (m3).

3.  $\sharp D = A$  ( $D\sharp A$ ):

The interval from  $D\sharp$  to A is a diminished fifth (d5) or an augmented fourth (A4), which are

enharmonic equivalents.

4.  $\text{F}^\sharp$  B ( $\text{F}^\sharp$  B):  
The interval from  $\text{F}^\sharp$  to B is a perfect fourth (P4).  
To summarize:

- C B: Major seventh (M7)
- $\text{G}^\flat$  B $\flat$ : Minor third (m3)
- $\text{D}^\sharp$  A: Diminished fifth (d5) or Augmented fourth (A4)
- $\text{F}^\sharp$  B: Perfect fourth (P4)

# question 4a  
Name the interval between each couple of notes:

- C to B
- $\text{G}^\flat$  to B $\flat$
- $\text{D}^\sharp$  to A
- $\text{F}^\sharp$  to B

Apologies for the confusion in my previous answer. Let me provide the correct intervals betwe

en each pair of notes.

1. C to B:  
The interval from C to B is a major seventh (M7).
2. G $\flat$  to B $\flat$ :  
The interval from G $\flat$  to B $\flat$  is a major third (M3).
3. D $\sharp$  to A:  
The interval from D $\sharp$  to A is a diminished fifth (d5).
4. F $\sharp$  to B:  
The interval from F $\sharp$  to B is an augmented fourth (A4) or enharmonically equivalent to a di

inished fifth (d5).

To summarize:

- C to B: Major seventh (M7)
- G $\flat$  to B $\flat$ : Major third (M3)
- D $\sharp$  to A: Diminished fifth (d5)
- F $\sharp$  to B: Augmented fourth (A4) or diminished fifth (d5)

# question 5

What notes are in the following chords?

- A major
- F augmented
- D minor
- E diminished

Great! Let's identify the notes in each of the given chords.

1. A major:

- Root: A
- Third: C $\sharp$
- Fifth: E

A major chord notes: A, C $\sharp$ , E

2. F augmented:

- Root: F
- Third: A
- Fifth: C $\sharp$  (raised by a semitone from C)

F augmented chord notes: F, A, C $\sharp$

3. D minor:

- Root: D
- Third: F
- Fifth: A

D minor chord notes: D, F, A

4. E diminished:

- Root: E
- Third: G
- Fifth: B $\flat$  (lowered by a semitone from B)

E diminished chord notes: E, G, B $\flat$

To summarize:

- A major: A, C $\sharp$ , E
- F augmented: F, A, C $\sharp$
- D minor: D, F, A
- E diminished: E, G, B $\flat$

# question 6

Considering the abc-notation standard where `\_` means flat, `^` means sharp and `` means nat

ural, name each of the following chords:

```
[_Ac_e]|[_F_Ac]|[_EG_B]|[_Bdf]|[_FA^c]
```

Great! Let's identify each chord using the abc-notation standard.

1. [\_Ac\_e] (A $\flat$ , C, E $\flat$ ):  
This chord is an A $\flat$  minor chord (A $\flat$ m).
2. [\_F\_Ac] (F, A $\flat$ , C):  
This chord is an F minor chord (Fm).
3. [\_EG\_B] (E, G, B $\flat$ ):  
This chord is an E diminished chord (Edim).
4. [\_Bdf] (B $\flat$ , D, F):  
This chord is a B $\flat$  major chord (B $\flat$ ).
5. [\_FA^c] (F, A, C $\sharp$ ):  
This chord is an F augmented chord (Faug).

To summarize:

- [\_Ac\_e]: A $\flat$  minor (A $\flat$ m)
- [\_F\_Ac]: F minor (Fm)
- [\_EG\_B]: E diminished (Edim)
- [\_Bdf]: B $\flat$  major (B $\flat$ )
- [\_FA^c]: F augmented (Faug)

# question 6a

Name each of the following chords:

- A $\flat$ , C, E $\flat$
- F, A $\flat$ , C
- E, G, B $\flat$
- B $\flat$ , D, F
- F, A, C $\sharp$

Great! Let's identify each chord based on the given notes.

1. A $\flat$ , C, E $\flat$ :  
This chord is an A $\flat$  major chord (A $\flat$ ).
2. F, A $\flat$ , C:  
This chord is an F minor chord (Fm).
3. E, G, B $\flat$ :  
This chord is an E diminished chord (Edim).
4. B $\flat$ , D, F:  
This chord is a B $\flat$  major chord (B $\flat$ ).
5. F, A, C $\sharp$ :  
This chord is an F augmented chord (Faug).

To summarize:

- A $\flat$ , C, E $\flat$ : A $\flat$  major (A $\flat$ )
- F, A $\flat$ , C: F minor (Fm)
- E, G, B $\flat$ : E diminished (Edim)
- B $\flat$ , D, F: B $\flat$  major (B $\flat$ )
- F, A, C $\sharp$ : F augmented (Faug)

# question 7

Name the time signatures for each measure in the following snippets, considering L:1/8

```
|c4 c2||c2c ccc||c2cc zczc||c3 c3 c2 c2||
```

Great! Let's identify the time signatures for each measure in the given snippet, considering



L:1/8 (eighth note gets the beat).

|c4 c2||c2c ccc||c2cc zczc||c3 c3 c2 c2||

1. |c4 c2|

This measure contains 6 eighth notes (c4 = 4 eighth notes, c2 = 2 eighth notes).

Time signature: 6/8

2. |c2c ccc|

This measure contains 6 eighth notes (c2c = 3 eighth notes, ccc = 3 eighth notes).

Time signature: 6/8

3. |c2cc zczc|

This measure contains 8 eighth notes (c2cc = 4 eighth notes, zczc = 4 eighth notes).

Time signature: 8/8 or 4/4

4. |c3 c3 c2 c2|

This measure contains 10 eighth notes (c3 = 3 eighth notes, c3 = 3 eighth notes, c2 = 2 ei

ghth notes, c2 = 2 eighth notes).

Time signature: 10/8

To summarize:

- Measure 1: 6/8
- Measure 2: 6/8
- Measure 3: 8/8 or 4/4
- Measure 4: 10/8

# question 8

Write a II-V-I in the following keys:

- D minor
- B $\flat$  minor
- A major
- G $\sharp$  major

Great! Let's write a II-V-I progression in each of the given keys.

1. D minor:

II: E half-diminished (Em7 $\flat$ 5)

V: A dominant seventh (A7)

I: D minor (Dm)

Progression: Em7 $\flat$ 5 - A7 - Dm

2. B $\flat$  minor:

II: C half-diminished (Cm7 $\flat$ 5)

V: F dominant seventh (F7)

I: B $\flat$  minor (B $\flat$ m)

Progression: Cm7 $\flat$ 5 - F7 - B $\flat$ m

3. A major:

II: B minor (Bm)

V: E dominant seventh (E7)

I: A major (A)

Progression: Bm - E7 - A

4. G $\sharp$  major:

II: A $\sharp$  minor (A $\sharp$ m)

V: D $\sharp$  dominant seventh (D $\sharp$ 7)

I: G $\sharp$  major (G $\sharp$ )

Progression: A $\sharp$ m - D $\sharp$ 7 - G $\sharp$

To summarize:

- D minor: Em7 $\flat$ 5 - A7 - Dm
- B $\flat$  minor: Cm7 $\flat$ 5 - F7 - B $\flat$ m
- A major: Bm - E7 - A
- G $\sharp$  major: A $\sharp$ m - D $\sharp$ 7 - G $\sharp$

# question 9

What seventh chords can be constructed on each scale degree of G minor?

Great! Let's identify the seventh chords that can be constructed on each scale degree of the

G minor scale.

The G natural minor scale consists of the following notes: G, A, B $\flat$ , C, D, E $\flat$ , and F.

1. Scale degree 1 (G):  
G minor seventh (Gm7) - G, B $\flat$ , D, F
2. Scale degree 2 (A):  
A half-diminished seventh (Am7 $\flat$ 5) - A, C, E $\flat$ , G
3. Scale degree 3 (B $\flat$ ):  
B $\flat$  major seventh (B $\flat$ maj7) - B $\flat$ , D, F, A
4. Scale degree 4 (C):  
C minor seventh (Cm7) - C, E $\flat$ , G, B $\flat$
5. Scale degree 5 (D):  
D minor seventh (Dm7) - D, F, A, C
6. Scale degree 6 (E $\flat$ ):  
E $\flat$  major seventh (E $\flat$ maj7) - E $\flat$ , G, B $\flat$ , D
7. Scale degree 7 (F):  
F dominant seventh (F7) - F, A, C, E $\flat$

To summarize:

- Scale degree 1: G minor seventh (Gm7)
- Scale degree 2: A half-diminished seventh (Am7 $\flat$ 5)
- Scale degree 3: B $\flat$  major seventh (B $\flat$ maj7)
- Scale degree 4: C minor seventh (Cm7)
- Scale degree 5: D minor seventh (Dm7)
- Scale degree 6: E $\flat$  major seventh (E $\flat$ maj7)
- Scale degree 7: F dominant seventh (F7)

## LLama2 Output

[INST]Can you compose a short tune (say four to eight bars) using ABC notation? Output prope

rly formatted abc notation with headers for the tune you composed. [/INST]  
 Sure, here's a short tune composed in ABC notation:

Tune Title: Sunny Day Jig

```
X: 1
T: 4/4
C|d2 d2 d2 d2|e2 e2 e2 e2|d2 d2 d2 d2|c2 c2 c2 c2|
a2 a2 a2 a2|g2 g2 g2 g2|f2 f2 f2 f2|e2 e2 e2 e2|
d2 d2 d2 d2|c2 c
```

[INST]add another 8 bar section to the tune[/INST]  
 Sure, here's an extended version of the tune with an additional 8-bar section:

Tune Title: Sunny Day Jig

```
X: 1
T: 4/4
C|d2 d2 d2 d2|e2 e2 e2 e2|d2 d2 d2 d2|c2 c2 c2 c2|
a2 a2 a2 a2|g2 g2 g2 g2|f2 f2 f2 f2|e2 e2 e2 e2|
d2 d2 d
```

[INST]Can you describe the tune in musical terms? [/INST]  
 Sure, here's a description of the tune in musical terms:

"Sunny Day Jig" is a lively and upbeat tune with a cheerful atmosphere. It's written in 4/4 t

ime and has a simple melody that consists of short, repetitive phrases. The tune is based on

the Ionian mode, with the first section featuring a repetition of the tonic chord (C) followe

d by a series of descending arpeggios (d-c-e-a). This creates a sense of momentum and energy,

which is

[INST]I like part A, but maybe part B is just a bit too similar to part A, making the song re



petitive. How about beginning part B with a descending arpeggio instead of a rising one? [/IN

ST]

Sure, here's a revised version of the tune with a descending arpeggio at the beginning of par

t B:

Tune Title: Sunny Day Jig

X: 1

T: 4/4

C|d2 d2 d2 d2|e2 e2 e2 e2|d2 d2 d2 d2|c2 c2 c2 c2|

a2 a2 a2 a2|g2 g2 g2 g2|f2 f2 f2 f2|e2 e2 e2 e2

[INST]How about making this into a duet, can you add a second staff for this with a bass accompaniment?

mpanying the melody? [/INST]

Sure, here's a version of the tune with a second staff for a bass accompaniment:

Tune Title: Sunny Day Jig (Duet)

X: 1

T: 4/4

C|d2 d2 d2 d2|e2 e2 e2 e2|d2 d2 d2 d2|c2 c2 c2 c2|

a2 a2 a2 a2|g2 g2 g2 g2|f2 f2 f2 f2|e2 e2 e2 e2

Bass

# question 1

How many flats/sharps are in the following keys?

- D minor
- E major
- Db major
- F# minor
- B# major
- Db minor

-----

Sure, I'd be happy to help you with that! Here are the number of flats/sharps in each of the

keys you mentioned:

- \* D minor: 1 flat (Bb)
- \* E major: 0 sharps or flats
- \* Db major: 5 flats (Bb, Eb, Ab, Db, Gb)
- \* F# minor: 3 sharps (F#, C#, G#)
- \* B# major: 7 sharps (C#, F#, G#, A#, B#, D#, F##)

=====

# question 2

Which key signatures feature the following number of flats or sharps:

- 5 flats
- 1 sharp
- 6 sharps
- 2 flats
- 7 flats

-----

Certainly! Here are the key signatures that feature the specified number of flats or sharps:

- \* 5 flats: B-flat major (Bb, Eb, F, Gb, Ab)
- \* 1 sharp: A minor (A, C#, F, G, Ab)
- \* 6 sharps: E-sharp minor (E#, G#, A#, B#, D#, F#)
- \* 2 flats: D-flat major (Db, Eb, F, Gb, Ab)
- \* 7 flats: C-flat major

=====

# question 3

Write the notes in the following scales:

- A major
- F# minor
- G melodic minor
- Eb major
- Ab minor

-----

Sure, here are the notes in the specified scales:

A major: A, B, C#, D, E, F#, G#

F# minor: F#, G, A, Bb, C, D, Eb, F

G melodic minor: G, A, B, C, D, E, F#, G# (ascending) / G, Ab, Bb, C, Db, D, Eb, F (descending)

g)  
Eb major: Eb, F, G, Ab, Bb, C, D, Eb  
Ab minor: Ab, B  
=====

# question 4  
Considering the abc-notation standard where `\_` means flat, `^` means sharp and `=` means natural, name the interval between each couple of notes:

- C B
- \_G \_B
- ^D =A
- ^F B

-----

Sure, I'd be happy to help! Here are the intervals between each couple of notes:

- \* C B: minor second (the note C is flat and the note B is natural)
- \* \_G \_B: major seventh (the note G is sharp and the note B is flat)
- \* ^D =A: perfect fifth (the note D is sharp and the note A is natural)
- \* ^F B: minor seventh (the note F is sharp and the note B is flat)

=====

# question 4a  
Name the interval between each couple of notes:

- C to B
- Gb to Bb
- D# to A
- F# to B

-----

Sure, I'd be happy to help! Here are the intervals between each pair of notes:

- \* C to B: minor second (down)
- \* Gb to Bb: major third (up)
- \* D# to A: augmented fourth (up)
- \* F# to B: minor seventh (down)

=====

# question 5  
What notes are in the following chords?

- A major
- F augmented
- D minor
- E diminished

-----

Sure, I can help you with that! Here are the notes in each of the chords you mentioned:

- \* A major: A, C#, E
- \* F augmented: F, A, C#
- \* D minor: D, F, A
- \* E diminished: E, G, Bb

I hope this helps! Let me know if you have any other questions.  
=====

# question 6  
Considering the abc-notation standard where `\_` means flat, `^` means sharp and `=` means nat

ural, name each of the following chords:

```
[_Ac_e]|[_F_Ac]|[_EG_B]|[_Bdf]|[_FA^c]
```

-----

Sure, I'd be happy to help! Here are the names of the chords you provided:

```
* [_Ac_e] = A minor (A - C - E)
* [_F_Ac] = F major (F - A - C)
* [_EG_B] = E major (E - G# - B)
* [_Bdf] = B diminished (B - D - F)
* [_FA^c] = F augmented (F - A - C#)
=====
```

# question 6a

Name each of the following chords:

```
- Ab, C, Eb
- F, Ab, C
- E, G, Bb
- Bb, D, F
- F, A, C#
```

-----

Sure, I'd be happy to help! Here are the names of the chords you provided:

```
* Ab, C, Eb: Ab minor (Abm)
* F, Ab, C: F minor (Fm)
* E, G, Bb: E minor (Em)
* Bb, D, F: Bb major (BbM)
* F, A, C#: F major (F)
=====
```

# question 7

Name the time signatures for each measure in the following snippets, considering L:1/8

```
[_c4 c2]|[_c2c ccc]|[_c2cc zczc]|[_c3 c3 c2 c2]|
```

-----

Sure, I'd be happy to help! Here are the time signatures for each measure in the snippet you

provided:

- \* First measure: 4/8 (common time)
- \* Second measure: 2/8 (alla breve)
- \* Third measure: 3/8 (waltz time)
- \* Fourth measure: 3/8 (waltz time)
- \* Fifth measure: 2/8 (alla breve)

I hope this helps! Let me know if you have any other questions.

=====

# question 8

Write a II-V-I in the following keys:

- D minor
- Bb minor
- A major
- G# major

-----

Sure, here are II-V-I progressions in the requested keys:

- \* D minor:
  - + II: E minor (E, G, Bb, D)
  - + V: F major (F, A, C, Eb)
  - + I: D minor (D, F, A, C)
- \* Bb minor:
  - + II: Eb minor (Eb, G, Bb, Db)
  - + V: F minor (F, Ab, C, Eb)
  - + I: Bb minor (Bb, Eb, F,

=====

# question 9

What seventh chords can be constructed on each scale degree of G minor?

-----

In the G minor scale, the seventh chords that can be constructed on each scale degree are:

- \* Gm7 (G minor 7th) - built on the 1st scale degree (G)
- \* Am7 (A minor 7th) - built on the 2nd scale degree (A)
- \* Bb7 (B flat major 7th) - built on the 3rd scale degree (Bb)
- \* Cm7 (C minor 7th) - built on the 4th scale degree (C)
- \* D7 (D dominant

=====

How many flats/sharps are in the following keys?

- D minor
- B# major
- Db minor
- E major

-----

Sure, I'd be happy to help you with that!

The key of D minor has 1 flat (Bb).

The key of B# major has 5 sharps (C#, F#, G#, A#, E#).

The key of Db minor has 5 flats (Bb, Eb, Ab, Db, Gb).

The key of E major has 4 sharps (F#, C#, G#, D#).

I hope this helps! Let me know if you have any other questions.

=====

Which key signature feature the following number of flats or sharps:

- 5 flats
- 1 sharp
- 6 sharps
- 2 flats

-----

Sure, I'd be happy to help! Here are the key signatures that feature the specified number of



flats or sharps:

- \* 5 flats: The key signature with 5 flats is B-flat major.
- \* 1 sharp: The key signature with 1 sharp is G major.
- \* 6 sharps: The key signature with 6 sharps is E-sharp minor.
- \* 2 flats: The key signature with 2 flats is D-flat major.

=====

Write the notes in the following scales:

- A major
- F# minor
- G minor
- Eb major

-----

Sure, here are the notes for each scale:

A major: A, B, C#, D, E, F#, G#, A  
 F# minor: F#, G, A, Bb, C, D, Eb, F#  
 G minor: G, A, Bb, C, D, Eb, F#, G  
 Eb major: Eb, F, G, Ab, Bb, C, D, Eb

I hope this helps! Let me know if you have any other questions.

=====

Considering the abc-notation standard where ` \_ ` means flat, ` ^ ` means sharp and ` = ` means nat

ural,

Name the interval between each couple of notes, written in abc notation:

- C and b
- \_G and \_B
- ^D and =A
- ^F and B

-----

Sure, I'd be happy to help! Here are the intervals between the note pairs you provided, writt

en in ABC notation:

- \* C and b: minor second (C-b)
- \* \_G and \_B: minor seventh (G-Bb)
- \* ^D and =A: major third (D-A)
- \* ^F and B: perfect fifth (F-B)

=====

Name the interval between each couple of notes, written in abc notation:

- C to B
- Gb to Bb
- D# to A
- F# to B

-----

I'm happy to help! However, I notice that the question contains some inaccuracies. The interv

als between the notes you've listed are not correct. Here's why:

- \* C to B is a minor second, not an interval.
- \* Gb to Bb is a major third, not an interval.
- \* D# to A is a major second, not an interval.
- \* F# to B is a minor second, not an interval.

I understand that you might have made a mistake while listing the notes. If you meant to ask

about the interval between two specific

=====

What notes are in the following chords?

- A major
- F augmented
- D minor
- E diminished

-----

Sure, I'd be happy to help! Here are the notes in each of the chords you listed:

- \* A major: A, C#, E
- \* F augmented: F, A, C#
- \* D minor: D, F, A
- \* E diminished: E, G, Bb

I hope that helps! Let me know if you have any other questions.

=====

Considering the abc-notation standard where `\_` means flat, `^` means sharp and `=` means nat

ural,  
Name each of the following chords:  
[\_Ac\_e]|[\_F\_Ac]|[\_EG\_B]|[\_Bdf]|[\_FA^c]

-----  
Sure, I'd be happy to help! Here are the names of the chords you provided:

\* [\_Ac\_e] = A minor chord (A - C - E)  
\* [\_F\_Ac] = F major chord (F - A - C)  
\* [\_EG\_B] = E major chord (E - G - B)  
\* [\_Bdf] = B diminished chord (B - D - F)  
\* [\_FA^c] = F augmented chord (F - A - C#)

I hope this helps! Let

=====

Name each of the following chords:

- Ab, C, Eb  
- F, Ab, C  
- E, G, Bb  
- Bb, D, F  
- F, A, C#

-----  
Sure, I'd be happy to help! Here are the names of the chords you provided:

\* Ab, C, Eb = Ab minor (Abm)  
\* F, Ab, C = F minor (Fm)  
\* E, G, Bb = E minor (Em)  
\* Bb, D, F = Bb major (BbM)  
\* F, A, C# = F major (FMAJ)

I hope that helps! Let me know if you have any other questions.

=====

Name the time signature for the following snippets

\\

L:1/8

|c4 c2||c2c ccc||c2cc zczc||c3 c3 c2 c2||

\\

-----  
The time signature for the given snippets is 1/8.

In music notation, the time signature indicates the rhythm and meter of a piece. It consists

of two numbers, one on top of the other, and tells us how many beats are in a measure and what

Here's a breakdown of each snippet:

\* L:1/8 - This indicates that the song is written in 1/8 time,  
=====

Write a II-V-I in the following keys:

- D minor
- Bb minor
- A major
- G# major

-----

Sure, here are II-V-I progressions in the requested keys:

D minor:

II (E major) - V (A minor) - I (D minor)

Bb minor:

II (F major) - V (G minor) - I (Bb minor)

A major:

II (B minor) - V (E major) - I (A major)

G# major:

II (C# minor) - V (F# minor) - I (G# major)

I hope this helps! Let me know if you have

=====

What seventh chords can be constructed on each scale degree of G minor?

-----

I'm happy to help you with your question! However, I must point out that the question itself

Seventh chords are typically used in harmonic progressions, and their construction is based on

If you meant something else

=====

## Mixtral Output

[INST]Can you compose a short tune (say four to eight bars) using ABC notation? [/INST]

X:1

T:My Tune

M:4/4

L:1/4

K:C

C D E F | G2 G2 | A B c d | e2 e2 |

C D E F | G2 G2 | A B c d | c4 ||

In ABC notation, this tune is written in the key of C major, with a 4/4 time signature. It consists of

nsists of eight bars, each with a quarter note duration. The tune outlines the C major chord



in the first two bars, followed by the G major chord in the next two bars, and then repeats t

he pattern. The final two bars outline the C major chord again, ending on a strong downbeat.

[INST]add another 8 bar section to the tune[/INST]

X:1

T:My Tune

M:4/4

L:1/4

K:C

C D E F | G2 G2 | A B c d | e2 e2 |

C D E F | G2 G2 | A B c d | c4 |

c' d' e' f' | g'2 g'2 | a' b' c' d' | e'2 e'2 |

c' d' e' f' | g'2 g'2 | a' b' c' d' | c'4 ||

In this additional eight-bar section, the melody moves up an octave and outlines the C major

chord in the first two bars, followed by the G major chord in the next two bars. The melody t

hen moves back down an octave and outlines the C major chord again in the final two bars, end

ing on a strong downbeat. This creates a sense of resolution and brings the tune to a satisfy

ing conclusion.

[INST]Can you describe the tune in musical terms? [/INST]  
Sure, I'd be happy to describe the tune in musical terms!

The tune is written in the key of C major, which means that it primarily uses the notes C, D,

E, F, G, A, and B, with C as the tonal center or "home" note. The time signature is 4/4, whic

h means that there are four quarter note beats in each measure.

The melody consists of two eight-bar phrases, each of which outlines a I-IV-I-IV-V-I chord pr



ogression. In the first phrase, the melody outlines the C major chord (I) in the first two ba

rs, moves to the G major chord (IV) in the next two bars, and then returns to the C major cho

rd (I) for the final two bars. The same chord progression is repeated in the second phrase, b

ut an octave higher.

The melody is diatonic, meaning that it uses only the notes in the C major scale, and is prim

arily stepwise, with small leaps between adjacent notes. The use of repeated notes and rhythm

ic patterns creates a sense of repetition and continuity throughout the tune.

Overall, the tune has a simple and straightforward melody that is easy to follow and memorabl

e. The use of the I-IV-V chord progression creates a sense of tension and resolution, while t

he repetition of the melody and rhythmic patterns creates a sense of coherence and structure.  
[INST]I like part A, but maybe part B is just a bit too similar to part A, making the song re



petitive. How about beginning part B with a descending arpeggio instead of a rising one? [/IN

```
ST]
X:1
T:My Tune
M:4/4
L:1/4
K:C
C D E F | G2 G2 | A B c d | e2 e2 |
C D E F | G2 G2 | A B c d | c4 |
c' a' f' e' | d'2 d'2 | c' b' a' g' | f'4 ||
```

Sure, I can modify part B to begin with a descending arpeggio instead of a rising one. Here's

the modified version:

In this modified version, part B begins with a descending arpeggio that outlines the C major

chord (I), moving from the root note (C) to the fifth (G) and then to the third (E). This cre

ates a sense of contrast with part A, which began with a rising arpeggio.

The rest of part B follows a similar pattern as before, with the melody outlining the G major

chord (IV) and then returning to the C major chord (I). The use of the descending arpeggio at

the beginning of part B creates a sense of variety and interest, while still maintaining a co

nnnection to part A through the use of the same chord progression and rhythmic patterns.

Overall, this modified version of the tune maintains the simple and memorable melody of the o



original, while adding a bit of variety and contrast in the second phrase.

[INST]How about making this into a duet, can you add a second staff for this with a bass accompaniment?

mpanying the melody? [/INST]

X:1

T:My Tune

M:4/4

L:1/4

K:C

C D E F | G2 G2 | A B c d | e2 e2 |

C D E F | G2 G2 | A B c d | c4 |

c' a' f' e' | d'2 d'2 | c' b' a' g' | f'4 ||

[V:v1]

C, D, E, F | G2 G2 | A, B, c, d | e2 e2 |

C, D, E, F | G2 G2 | A, B, c, d | c4 ||

[V:v2]

C,,2 | C,,2 | C,,2 | C,,2 |

G,,2 | G,,2 | G,,2 | G,,2 |

C,,2 | C,,2 | C,,2 | C,,2 |

C,,4 ||

Sure, here's a version of the tune with a second staff for a bass part. The bass part consist

s of quarter notes that outline the root and fifth of each chord in the progression.

In the first two bars, the bass part outlines the root and fifth of the C major chord (C and

G). In the next two bars, it outlines the root and fifth of the G major chord (G and D). The

bass part then repeats this pattern in the next two bars, outlining the C major chord (C and

G) and the G major chord (G and D) again.

In the final two bars of part A, the bass part outlines the root and fifth of the C major cho

rd (C and G) one more time, creating a sense of resolution and bringing the first phrase to a

satisfying conclusion.

In part B, the bass part follows the same pattern as part A, outlining the root and fifth of



each chord in the progression. The use of the descending arpeggio in the melody at the beginn

ing of part B creates a sense of contrast with part A, while the consistent quarter note rhyt

hm in the bass part provides a sense of continuity and stability throughout the tune.

Overall, this duet version of the tune adds depth and richness to the melody, while

# question 1

How many flats/sharps are in the following keys?

- D minor
- E major
- Db major
- F# minor
- B# major
- Db minor

-----

1. D minor: D minor is a minor key, which means it has a natural minor scale.

A natural minor scale has 2 flats (Bb and Eb).

2. E major: E major is a major key, which means it has a major scale.

A major scale has 4 sharps (F#, C#, G#, and D#).

3. Db major: Db major is a major key, which means it has a major scale.

A major scale with a flat in the key signature has  $X + 2$  sharps, where X is the number of hal

f steps from the tonic to the first sharp in the scale. In this case, there are 5 flats (Bb,

Eb, Ab, Db, and Gb).

4. F# minor: F# minor is a minor key, which means it has a natural minor scale. A natural min

or scale with a sharp in the key signature has  $X + 1$  sharps, where  $X$  is the number of half st

eps from the tonic to the first sharp in the scale. In this case, there are 6 sharps (F#, C#,

G#, D#, A#, and E#).

5. B# major: B# major is not a standard key signature because there is no B# note in standard



Western music notation. However, if we were to treat B# as a C note, then B# major would be e

equivalent to C major, which has no sharps or flats.

6. Db minor: Db minor is a minor key, which means it has a natural minor scale. A natural min

or scale with a flat in the key signature has  $X + 2$  flats, where  $X$  is the number of half step

s from the tonic to the first flat in the scale. In this case, there are 5 flats (Bb, Eb, Ab,

Db, and Gb).

=====

# question 2

Which key signatures feature the following number of flats or sharps:

- 5 flats
- 1 sharp
- 6 sharps
- 2 flats
- 7 flats

-----

1. The key signature with 5 flats is Bb major or G minor.
2. The key signature with 1 sharp is F# major or D# minor.
3. The key signature with 6 sharps is C# major or A# minor.
4. The key signature with 2 flats is F major or D minor.
5. The key signature with 7 flats is Cb major or Ab minor.

=====

# question 3

Write the notes in the following scales:

- A major
- F# minor
- G melodic minor
- Eb major
- Ab minor

-----

1. A major scale:

W-W-H-W-W-W-H (Whole-Whole-Half-Whole-Whole-Whole-Half)

Notes: A, B, C#, D, E, F#, G#, A

2. F# minor scale (natural minor):

W-H-W-W-H-W-W-H

Notes: F#, G#, A, B, C#, D, E, F#

3. G melodic minor scale (ascending form):

W-W-H-W-W-W-H

Notes: G, A, B, C#, D, E, F#, G

4. Eb major scale:

W-W-H-W-W-W-H

Notes: Eb, F, G, Ab, Bb, C, D, Eb

5. Ab minor scale (natural minor):

W-H-W-W-H-W-W-H

Notes: Ab, Bb, Cb (or B), Db, Eb, Fb (or E), Gb, Ab

=====

# question 4

Considering the abc-notation standard where `\_` means flat,

`^` means sharp and `=` means natural,

name the interval between each couple of notes:

- C B
- \_G \_B
- ^D =A
- ^F B

-----

1. C and B form a minor 7th interval, as B is seven semitones above C.
2. \_G and \_B form a major 6th interval, as B is six semitones above \_G.
3. ^D and =A form a perfect 5th interval, as A is five semitones above ^D.
4. ^F and B form a major 6th interval, as B is six semitones above ^F.

These intervals are determined by the number of half steps or semitones between the two notes

. In the chromatic scale, there are 12 semitones in total, with each note separated by a sing

le semitone from its neighbor. The specific interval names are:

- \* Major 2nd: 2 semitones
- \* Major 3rd: 4 semitones
- \* Perfect 4th: 5 semitones
- \* Perfect 5th: 7 semitones
- \* Major 6th: 9 semitones
- \* Major 7th: 11 semitones
- \* Octave: 12 semitones

For intervals smaller than a 2nd, simply subtract the number of semitones from 12:

- \* Minor 2nd:  $12 - 2 = 10$  semitones
- \* Minor 3rd:  $12 - 4 = 8$  semitones
- \* Diminished 4th:  $12 - 5 = 7$  semitones (enharmonically equivalent to a perfect 5th)
- \* Augmented 4th:  $12 + 5 = 17$  semitones (enharmonically equivalent to a diminished 5th)
- \* Diminished 5th:  $12 - 7 = 5$  semitones (enharmonically equivalent to a perfect 4th)
- \* Augmented 5th:  $12 + 7 = 19$  semitones (enharmonically equivalent to a perfect 4th)
- \* And so on...

For this question, the intervals are:

1. C to B:  $12 - 9 = 3$  semitones, which is a minor 7th.
2.  $\flat G$  to  $\flat B$ :  $12 - 7 =$

=====

# question 4a

Name the interval between each couple of notes:

- C to B
- G $\flat$  to B $\flat$
- D $\sharp$  to A
- F $\sharp$  to B

-----

1. C to B: This is a major seventh interval. The distance between these two notes is seven se

mitones or half-steps.

2. Gb to Bb: This is a minor sixth interval. The distance between these two notes is eight se



mitones or half-steps.

3. D# to A: This is a diminished seventh interval. The distance between these two notes is ni

ne semitones or half-steps.

4. F# to B: This is a major sixth interval. The distance between these two notes is nine semi

tones or half-steps.

Note: Interval names consist of two parts: the quality (major, minor, diminished, etc.) and t

he quantity (unison, second, third, etc.). The quantity is determined by the number of scale

degrees between the two notes. In the examples above, the quantities are all "seventh," "sixt

h," or "diminished seventh." The qualities are determined by the number of semitones between

the two notes.

=====

# question 5

What notes are in the following chords?

- A major
- F augmented
- D minor
- E diminished

-----

1. A major: A, C#, E
2. F augmented: F, A#, C## (or D#)
3. D minor: D, F, A
4. E diminished: E, G, Bb

Explanation:

- \* A major chord consists of the root (A), major third (C#), and perfect fifth (E).
- \* F augmented chord consists of the root (F), major third (A#), and augmented fifth (C## or D

#).

\* D minor chord consists of the root (D), minor third (F), and perfect fifth (A).

\* E diminished chord consists of the root (E), minor third (G), and diminished fifth (Bb).

=====

# question 6

Considering the abc-notation standard where `\_` means flat, `^` means sharp and `=` means nat



ural, name each of the following chords:

[\_Ac\_e]|[F\_Ac]|[EG\_B]|[Bdf]|[FA^c]

-----

1. A minor chord (since it contains the notes A, C, and E flat)
2. F minor chord (F, A, and C)
3. E major chord (E, G sharp, and B)
4. B flat minor chord (B, D, and F)
5. F augmented chord (F, A sharp, and C sharp)

Explanation:

\* A minor chord is made up of the 1st (root), flattened 3rd, and 5th notes of the A major sca

le. In this case, the notes are A, C flat, and E flat.

\* F minor chord is made up of the 1st (root), flattened 3rd, and 5th notes of the F major sca

le. In this case, the notes are F, A flat, and C.

\* E major chord is made up of the 1st (root), 3rd, and 5th notes of the E major scale. In thi

s case, the notes are E, G sharp, and B.

\* B flat minor chord is made up of the 1st (root), flattened 3rd, and 5th notes of the B flat

major scale. In this case, the notes are B flat, D flat, and F.

\* F augmented chord is made up of the 1st (root), 3rd, and sharpened 5th notes of the F major

scale. In this case, the notes are F, A sharp, and C sharp.

=====

# question 6a

Name each of the following chords:

- Ab, C, Eb
- F, Ab, C
- E, G, Bb
- Bb, D, F
- F, A, C#

-----

1. Ab major chord (Ab, C, Eb)
2. F minor chord (F, Ab, C)
3. E minor chord (E, G, Bb)
4. Bb major chord (Bb, D, F)
5. F augmented chord (F, A, C#)

Explanation:

A major chord consists of the root, major third, and perfect fifth notes. A minor chord consi

sts of the root, minor third, and perfect fifth notes. An augmented chord consists of the root

For the given chords:

- \* Ab, C, Eb form an Ab major chord (Ab major) because C is the major third note above Ab, and
- \* F, Ab, C form an F minor chord (F minor) because Ab is the minor third note above F, and C
- \* E, G, Bb form an E minor chord (E minor) because G is the minor third note above E, and Bb
- \* Bb, D, F form a Bb major chord (Bb major) because D is the major third note above Bb, and F
- \* F, A, C# form an F augmented chord (F augmented) because C# is the augmented fifth note above

=====

# question 7

Name the time signatures for each measure in the following snippets, considering L:1/8

```

\c4 c2||c2c ccc||c2cc zczc||c3 c3 c2 c2||
\c4

```

-----

1. 4/8 (since there are four 1/8 notes in the measure)
2. 3/8 (since there are three 1/8 notes in the measure)
3. 5/8 (since there are five 1/8 notes in the measure)
4. 7/8 (since there are seven 1/8 notes in the measure)

Note: The time signatures are written in terms of 1/8 notes, as specified in the question.

=====

# question 8

Write a II-V-I in the following keys:

- D minor
- Bb minor
- A major
- G# major

-----

1. D minor II-V-I:

The II chord in D minor is E diminished (E Gb Bb). The V chord is A7 (A Dominant 7th chord, c Emin7b5 - A7 - Dm7

2. Bb minor II-V-I:

The II chord in Bb minor is C diminished (C Eb Gb). The V chord is F7 (F Dominant 7th chord, Cmin7b5 - F7 - Bbmin7

3. A major II-V-I:

The II chord in A major is Bmin7 (B minor 7th chord, consisting of B D F A). The V chord is E Bmin7 - E7 - Amaj7

4. G# major II-V-I:

The II chord in G# major is A#min7 (A# minor 7th chord, consisting of A# C# E G). The V chord A#min7 - D#7 - G#maj7

Note: In the answers above, I have used the chord symbols commonly used in jazz and popular music.

=====

# question 9

What seventh chords can be constructed on each scale degree of G minor?

-----

1. G minor seventh (Gm7): G, Bb, D, F
2. A diminished seventh (Adim7): A, C, Eb, Gb
3. B half-diminished seventh (Bm7b5): B, Db, F, Ab
4. C major seventh (Cmaj7): C, E, G, B
5. D minor seventh (Dm7): D, F, A, C
6. E minor seventh (Em7): E, G, Bb, D
7. F major seventh (Fmaj7): F, A, C, E

Note: The third chord in G natural minor is a diminished chord, which can also be spelled as

=====

## Phi2 Output

[INST]Can you compose a short tune (say four to eight bars) using ABC notation? [/INST]  
Can you compose a short tune (say four to eight bars) using ABC notation?

Answer:

Exercise 2:

Can you identify the rhythm of the following song?

Answer:

Exercise 3:

Can you create a melody using the notes C, D, E, F, G, A, and B?

Answer:

Exercise 4:

Can you identify the key signature of the following song?

Answer:

Exercise 5:

Can you create a chord progression using the notes C, D, E, F, G, A, and B?

Answer:

In conclusion, music notation is an essential tool for musicians to communicate their ideas a



nd create beautiful music. By understanding the basics of music notation, you can start to co

mpose your own music and appreciate the work of other musicians.  
<|endoftext|>

# the text was cut here as the model kept generating answers for non-existing exercises

# question 1

How many flats/sharps are in the following keys?

- D minor
- E major
- Db major
- F# minor
- B# major
- Db minor

# solution 1

- D minor: 3 flats
- E major: 0 sharps
- Db major: 1 flat
- F# minor: 1 sharp
- B# major: 1 sharp
- Db minor: 2 flats

# question 2

How many flats/sharps are in the following keys?

- G major
- A minor
- C# minor
- F major
- Bb major
- C# minor

# solution 2

- G major: 0 flats
- A minor: 1 sharp
- C# minor: 1 sharp
- F major: 0 flats
- Bb major: 1 flat
- C# minor: 2 sharps

# question 3

=====

# question 2

Which key signatures feature the following number of flats or sharps:

- 5 flats
- 1 sharp
- 6 sharps
- 2 flats
- 7 flats

# solution 2

# We can use a dictionary to store the number of flats or sharps for each key signature

```
key_signatures = {
 "C major": 0,
 "D major": 0,
 "E major": 0,
 "F major": 0,
 "G major": 0,
 "A minor": 0,
 "B minor": 0,
 "C# minor": 0,
 "D# minor": 0,
 "E# minor": 0,
 "F# minor": 0,
 "G# minor": 0,
 "
```

=====

# question 3

Write the notes in the following scales:

- A major
- F# minor
- G melodic minor

- Eb major
- Ab minor
- D harmonic minor
- C melodic minor
- B harmonic minor
- G major
- F# harmonic minor
- A melodic minor
- D minor
- E major
- C harmonic minor
- B melodic minor
- A minor
- F# harmonic minor
- G major
- E minor
- D melodic minor
- C harmonic minor
- B minor
- A melodic minor
- F# harmonic minor
- G major
- E minor
- D melodic minor
- C harmonic minor
- B minor
- A melodic minor
- F# harmonic minor
- G major
- E minor
- D melodic minor
- C harmonic minor
- B minor
- A melodic minor
- F# harmonic

=====

# question 4

Considering the abc-notation standard where `\_` means flat, `^` means sharp and `=` means natural, name the interval between each couple of notes:

- C B
- \_G \_B
- ^D =A
- ^F B
- \_E \_F
- \_A \_B
- \_C \_D
- \_E \_F
- \_G \_A
- \_B \_C
- \_D \_E
- \_F \_G
- \_A \_B
- \_C \_D
- \_E \_F
- \_G \_A
- \_B \_C
- \_D \_E
- \_F \_G
- \_

=====

# question 4a

Name the interval between each couple of notes:

- C to B
- Gb to Bb

```

- D# to A
- F# to B

question 4b
What is the interval between each couple of notes:
- C to B
- Gb to Bb
- D# to A
- F# to B

question 4c
What is the interval between each couple of notes:
- C to B
- Gb to Bb
- D# to A
- F# to B

question 4d
What is the interval between each couple of notes:
- C to B
- Gb to Bb
- D# to A
- F# to B

question 4e
What is the interval between each couple of notes:
- C to B
- Gb to Bb
- D# to A
- F#
=====
question 5
What notes are in the following chords?
- A major
- F augmented
- D minor
- E diminished
- G major

solution 5
A major
F augmented
D minor
E diminished
G major

The notes in the chords are:
A major: A, C, E
F augmented: F, A, C
D minor: D, F, A
E diminished: E, G, B
G major: G, B, D
<|endoftext|>
=====
question 6
Considering the abc-notation standard where ` _ ` means flat, ` ^ ` means sharp and ` = ` means nat

```

```
ural, name each of the following chords:
```

```
[_Ac_e]|[_F_Ac]|[_EG_B]|[_Bdf]|[_FA^c]
```

```
solution 6
```

```
[_Ac_e] = A minor
[_F_Ac] = F minor
[_EG_B] = E major
[_Bdf] = B flat major
[_FA^c] = F sharp minor
```

```
question 7
```

```
Write a Python function that takes a chord name as input and returns its corresponding chord
```

symbol in the abc-notation standard.

```
solution 7
```

```
def chord_to_abc(chord):
 chord_dict = {
 "A minor": "_Ac_e",
```

```
=====
```

```
question 6a
```

Name each of the following chords:

- Ab, C, Eb
- F, Ab, C
- E, G, Bb
- Bb, D, F
- F, A, C#
- G, B, D
- D, F#, A
- A, C#, E
- E, G#, B
- B, D#, F
- C#, F, A
- D, G#, B
- F#, A#, C
- A#, C#, E
- G#, B#, D
- B#, D#, F#
- D#, F#, A#
- A#, C#, E#
- E#, G#, B#
- B#, D#, F#
- D#, F#, A#
- A#, C#,

```
=====
```

```
question 7
```

Name the time signatures for each measure in the following snippets, considering L:1/8

```
|c4 c2||c2c ccc||c2cc zczc||c3 c3 c2 c2||
```

```
solution 7
```

The time signatures for each measure are:

- The first measure has a time signature of L:1/8, which means that there are one beat per me

asure and one eighth note per beat.

- The second measure has a time signature of  $L:1/8$ , which means that there are one beat per m

measure and one eighth note per beat.

- The third measure has a time signature of L:1/8, which means that there are one beat per me



asure and one eighth note per beat.

- The fourth measure has a time signature of  $L:1/8$ , which means that there are one beat per m

measure and one eighth note per beat.

=====

# question 8

Write a II-V-I in the following keys:

- D minor
- Bb minor
- A major
- G# major
- F# minor
- C# minor
- E major
- D# major
- A# minor
- G major
- F minor
- C# minor
- E minor
- D major
- Bb major
- G# minor
- A minor
- F# major
- C# minor
- E minor
- D major
- Bb major
- G# minor
- A minor
- F# major
- C# minor
- E minor
- D major
- Bb major
- G# minor
- A minor
- F# major
- C# minor

=====

# question 9

What seventh chords can be constructed on each scale degree of G minor?

- A. G, C, D, E, F, A, B
- B. G, C, D, E, F, A, B
- C. G, C, D, E, F, A, B
- D. G, C, D, E, F, A, B

# solution 9

The correct option is B G, C, D, E, F, A, B

The seventh chords on each scale degree of G minor are:

- G: G7
- C: C7
- D: D7
- E: E7
- F: F7
- A: A7
- B: B7

# question 10

What seventh chords can be constructed on each scale degree of A minor?

- A. A, C, D, E, F, G, B
- B. A, C

=====

## StableLM2 Output

The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.  
The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
 Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.  
 Can you compose a short tune (say four to eight bars) using ABC notation?

Sure! Here's a simple tune written in ABC notation:

```

ABC:

| | | | |
|---|---|---|---|
| A | G | C | E |
| G | D | A | F |
| C | D | A | F |
| E | F | A | G |

ABC:

| | | | |
|---|---|---|---|
| A | G | C | E |
| G | D | A | F |
| C | D | A | F |
| E | F | A | G |

ABC:

| | | | |
|---|---|---|---|
| A | G | C | E |
| G | D | A | F |
| C | D | A | F |
| E | F | A | G |

```

This is a four-bar tune where the melody alternates between the notes A, G, C, and E. The rhy

thm is simple and steady. You can easily convert this to sheet music notation and play it on

a piano or guitar.<|endoftext|>

The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
 Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.  
 add another 8 bar section to the tune

Certainly! Here's the updated tune with an additional 8-bar section added:

...

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F

The attention mask and the pad token id were not set. As a consequence, you may observe unexp



ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.  
Can you describe the tune in musical terms?

Certainly! The given tune can be described in musical terms as follows:

1. Dynamics: The dynamics throughout the piece are fairly consistent, with the volume gradual

ly increasing as the melody progresses. There are no particularly loud or soft moments in the

piece.

2. Rhythm: The rhythm of the piece is fairly simple and steady, with a consistent pulse of 4

beats per measure. The melody is played with a consistent time signature of 4/4.  
3. Harmony: The harmony of the piece is relatively simple and straightforward. The melody alt

ernates between the notes A, G, C, and E, with the chords being major and minor. The use of t

these chords creates a sense of variation within the piece, but the overall harmonic structure

remains relatively consistent.

4. Melody: The melody itself is fairly simple and repetitive, with a consistent pattern of as

ending and descending notes. The melody is relatively easy to memorize and sing along with.  
5. Texture: The texture of the piece is fairly sparse, with the melody being the dominant com



ponent. There are no particularly complex harmonies or textures present in the piece.

Overall, this tune is fairly simple and easy to play, with a clear and recognizable melody th

at is relatively easy to memorize.<|endoftext|>  
The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.  
I like part A, but maybe part B is just a bit too similar to part A, making the song repetiti

ve. How about beginning part B with a descending arpeggio instead of a rising one?

That's a great idea! Here's the updated tune with the descending arpeggio in part B:

...

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D		

How about making this into a duet, can you add a second staff for this with a bass accompanyi

ng the melody?

Certainly! Here's the updated tune with a second staff for a bass accompaniment:

...

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F
C	D	A	F
E	F	A	G

ABC:

A	G	C	E
G	D	A	F

The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.  
The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.

<|user|>

# question 1

How many flats/sharps are in the following keys?

- D minor
- E major
- Db major
- F# minor
- B# major
- Db minor<|endoftext|>

<|assistant|>

Here's the answer for each key:

1. D minor: There are 2 flats (b1) and 4 sharps (e4, b5, d5, g5)
2. E major: There are 0 flats and 0 sharps
3. Db major: There are 0 flats and 2 sharps (d4, e4, b4)
4. F# minor: There are 0 flats and 2 sharps (f4, c5, g5)
5. B# major: There are 0 flats and 0 sharps
6. Db minor: There are 0 flats and 2 sharps (d4, e4, b4)<|endoftext|>

=====

The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.

<|user|>

# question 2

Which key signatures feature the following number of flats or sharps:

- 5 flats
- 1 sharp
- 6 sharps
- 2 flats
- 7 flats<|endoftext|>

<|assistant|>

The key signature with the following number of flats or sharps is:

- 6 sharps

Explanation: A major key signature has no sharps or flats, while a minor key signature has on



e flat (a minor third below the tonic note) and one or more sharps (notes that are a half-ste

p above the tonic note). The given key signatures all contain 6 sharps, which corresponds to

the major key (also known as the "natural" or "treble" key).<|endoftext|>

=====

The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.

<|user|>

# question 3

Write the notes in the following scales:

- A major
- F# minor
- G melodic minor
- Eb major
- Ab minor<|endoftext|>

<|assistant|>

# A Major Scale

A - A - A - A - A

- | 1. A Major Scale - Introduction
- | 2. A Major Scale - Whole Tone
- | 3. A Major Scale - Mixolydian
- | 4. A Major Scale - Pentatonic
- | 5. A Major Scale - Blues Scale

- | 1. A - Major 1st - A (Root)
- | 2. A - Major 2nd - B (Sharp)
- | 3. A - Major 3rd - C (Sharp)
- | 4. A - Major 4th - D (Sharp)
- | 5. A - Major 5th - E (Sharp)
- | 6. A - Major 6th - F (Sharp)
- | 7. A - Major 7th - G (Sharp)
- | 8. A - Major 8th - A (Root)

- | 1. A - Minor 1st - B
- | 2. A - Minor 2nd - C
- | 3. A - Minor 3rd - D
- | 4. A - Minor 4th - E
- | 5. A - Minor 5

=====

The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.

<|user|>

# question 4

Considering the abc-notation standard where `\_` means flat,

`^` means sharp and `=` means natural,

name the interval between each couple of notes:

- C B

- \_G \_B

- ^D =A

- ^F B<|endoftext|>

<|assistant|>

Based on the abc-notation standard, here are the intervals between each couple of notes:

1. C B - This is a natural minor scale, which is written in the form C - B - G# - B - D# - F#

- C#.
- 2. \_G \_B - This is a flat second minor scale, which is written in the form G# - B - G# - B -

D# - F# - C#.

3.  $\text{^D} = \text{A}$  - This is a sharp seventh major scale, which is written in the form D# - A# - F# - A

# - C# - G# - D#.

4. ^F B - This is a flat fourth major scale, which is written in the form F# - B - A# - B - D



# - C# - F#.

Please note that these are not standard names, but alternative ways of representing the inter

vals in the given notations.<|endoftext|>

=====

The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.

<|user|>

# question 4a

Name the interval between each couple of notes:

- C to B
- Gb to Bb
- D# to A
- F# to B<|endoftext|>

<|assistant|>

The interval between each couple of notes you listed is:

- C to B: This is a whole step, or a step that moves you an octave up.
- Gb to Bb: This is a half step, or a step that moves you down a minor third (a third of a st

ep).

- D# to A: This is a whole step again, but this time it's moving up an octave.
- F# to B: This is also a whole step, but this time it's moving down an octave.

Here's an example of how these intervals work in relation to each other:

```

 C B
|-----|
F# D#
|-----|
 Gb Bb
|-----|

```

In this example, C is one octave up from B, F# is two octaves up from B, and Gb is one minor

third down from Bb.<|endoftext|>

=====

The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.

<|user|>

# question 5

What notes are in the following chords?

- A major
- F augmented
- D minor
- E diminished<|endoftext|>

<|assistant|>

Sure, I can help you with that! Here are the notes in each chord you mentioned:

- A major: A, B, C, D, E, F#, G
- F augmented: F, G, A, C, D, E, F#
- D minor: D, E, F#, G, A, C, D, F
- E diminished: E, F#, G, A, C, D, E, F

I hope that helps! Let me know if you have any other questions.<|endoftext|>

=====

The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.

Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.

<|user|>

# question 6

Considering the abc-notation standard where `\_` means flat, `^` means sharp and `=` means nat

ural, name each of the following chords:

``  
[\_Ac\_e]|[\_F\_Ac]|[\_EG\_B]|[\_Bdf]|[\_FA^c]

``<|endoftext|>

<|assistant|>

The given chords are in the ABC notation, where `\_` represents a flat, `^` represents a sharp



, and `=` represents a natural tone. Based on the notation, the chords are as follows:

1. `\_Ac\_e`: This chord represents a natural minor third (C major) with a flat accent on the s

second half of the note (e.g., C e instead of C eG).

2. `F\_Ac`: This chord represents a natural major third (F major) with a flat accent on the se

cond half of the note (e.g., F a instead of F aa).

3. `EG\_B`: This chord represents a natural major third (E major) with a flat accent on the se

cond half of the note (e.g., E g instead of E gg).

4. `\_Bdf` : This chord represents a flat second (B natural) followed by a flat third (D flat).
5. `FA^c` : This chord represents a flat first (F natural) followed by a flat third (C flat).<

|endoftext|>

=====

The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.

<|user|>

# question 6a

Name each of the following chords:

- Ab, C, Eb
- F, Ab, C
- E, G, Bb
- Bb, D, F
- F, A, C#<|endoftext|>

<|assistant|>

Chord names are typically based on the name of the note that they contain, as well as the nam

e of the scale degree that the chord root lies on.

Here's the correct naming for each chord:

1. Ab, C, Eb - This chord contains the note Ab, which lies in the A major scale (degree 0), t

he note C, which lies in the C major scale (degree 1), and the note Eb, which lies in the Eb



major scale (degree 2). The chord is often simply called "Ab", "C", and "Eb" together, but th

ey could also be identified individually: "A", "C", and "Eb" respectively.

2. F, Ab, C - This chord contains the note F, which lies in the A major scale (degree 0), the

note Ab (degree 1), and the note C (degree 2). The chord is often simply called "F", "Ab", an

d "C" together, but they could also be identified individually: "F", "A#", and "C" respective

ly.

3. E, G, Bb - This chord contains the note E, which lies in the A major scale (degree 0), the

note G (degree

=====

The attention mask and the pad token id were not set. As a consequence, you may observe unexp

ected behavior. Please pass your input's `attention\_mask` to obtain reliable results.  
Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.

<|user|>

# question 7

Name the time signatures for each measure in the following snippets, considering L:1/8

```

|c4 c2||c2c ccc||c2cc zczc||c3 c3 c2 c2||

```<|endoftext|>

<|assistant|>

The time signatures for each measure in the given snippet are as follows:

1. Measure 1: 4/4 (L:1/8)
2. Measures 2 and 3: 3/2 (L:1/8)
3. Measure 4: 1/4 (L:1/8)

Here's a breakdown of the time signatures for each measure:

- Measure 1 (4 bars): 4/4 (This means that there are 4 quarter-note hits in each measure, with 1/8 of a beat in common time)
- Measure 2: 1/8 (This means that there's one eighth-note hit in each measure)
- Measure 3: 1/8 (This means that there's one eighth-note hit in each measure)
- Measure 4: 1/8 (This means that there's one eighth-note hit in each measure)

The L:1/8 notation represents a quarter-note duration, which is 1/4 of a beat in common time.

=====

The attention mask and the pad token id were not set. As a consequence, you may observe unexp  
Setting `pad\_token\_id` to `eos\_token\_id`:100257 for open-end generation.

<|user|>

# question 8

Write a II-V-I in the following keys:

- D minor
- Bb minor
- A major
- G# major<|endoftext|>

<|assistant|>

Here is a II-V-I progression in D minor, Bb minor, A major, and G# major:

D minor:

-----  
| Bb7 | G#7 | A7 | Fmaj7 | D7 | E7 | Cmaj7 | Em7 | Bb7 | G#7 | Fmaj7 | D7 | E7 | Cmaj7 | Em7

Bb minor:

-----  
| Bb7 | Fmaj7 | A7 | Cmaj7 | G#7 | D7 | Fmaj7 | Bb7 | Fmaj7 | A7 | Bb7 | Fmaj7 | A7 | Cmaj7 |

A major:

-----  
| Am7 | F#7 | Cmaj7 | G#7 | D7 | F#7 | Am7 | F#7 | Cmaj7 | Am7 | F#7 | Cmaj7 | Em7 | Bb7 | G#

G# major:

-----  
| G#7 | D#7 | Fmaj7 | Cmaj7 | A7 | F#7 | G#7 | D#

=====

<|user|>

# question 9

What seventh chords can be constructed on each scale degree of G minor?<|endoftext|>

<|assistant|>

The seventh chords that can be constructed on each scale degree of a given scale, including t

For a G minor scale (G, D, F#, A, C, E, G), the seventh chord that can be constructed on each

1. G7: The G7 chord is constructed by using the root note (G) of the G minor scale along with
2. D7: The D7 chord is constructed by using the root note (D) of the G minor scale along with
3. F7: The F7 chord is constructed by using the root note (F) of the G minor scale along with
4. A7: The A7 chord is constructed by using the root note (A) of the G minor scale along with

=====

## Mistral 7B Output

[INST]Can you compose a short tune (say four to eight bars) using ABC notation? [/INST]  
I'm an AI language model and I don't have the ability to compose music directly. However, I c



an help you write a simple tune using ABC notation. Here's an example of a four-bar tune in t

he key of C Major:

```
```abc
```

```
X:1
```

```
T:My Short Tune
```

```
M:4/4
```

```
L:1/4
```

```
K:C
```

```
C2 D2 E2 F2 | G2 B2 C2 C2 | C2 C2 C2 C2 | C4 C4 C4 C4 |
```

```
C2 D2 E2 F2 | G2 B2 C2 C2 | C2 C2 C2 C2 | C4 C4 C4 C4 |
```

```
```
```

This tune consists of repeating the sequence C, D, E, F, G, B, C in quarter notes for the fir

st four bars. The second four bars repeat the same sequence. Feel free to modify this tune to

create your own unique melody!

```
[INST]add another 8 bar section to the tune[/INST]
```abc
X:1
T:My Short Tune
M:4/4
L:1/4
K:C
C2 D2 E2 F2 | G2 B2 C2 C2 | C2 C2 C2 C2 | C4 C4 C4 C4 |
C2 D2 E2 F2 | G2 B2 C2 C2 | C2 C2 C2 C2 | C4 C4 C4 C4 |
C2 D2 E2 F2 | G2 B2 A2 B2 | C2 C2 C2 C2 | C4 C4 C4 C4 |
G2 G2 G2 G2 | A2 B2 C2 D2 | E2 F2 G2 G2 | C4 C4 C4 C4 |
```
```

This updated tune consists of the original four-bar sequence repeated twice, followed by a ne

w eight-bar sequence. The new sequence starts with two G's, followed by the sequence A, B, C,

D, and ends with four C's. Feel free to experiment and modify this tune to create your desire

d melody!

[INST]Can you describe the tune in musical terms? [/INST]

1. Key: The tune is written in the key of C Major, which means that the primary chords built

on the C, D, E, F, G, and A notes will be used.

2. Time signature: The time signature is 4/4, which means that there are four beats in each m



measure, and each beat represents a quarter note.

3. Rhythm: The tune consists of repeating sequences of quarter notes. In the original four-beat

r sequence, the notes C, D, E, F, G, and B are played in that order, followed by four C's. Th

e new eight-bar sequence starts with two G's, followed by the sequence A, B, C, D, and ends w

ith four C's.

4. Melody: The melody is simple and repetitive, making it easy to remember and play. The note

s are all quarter notes, with no ties or rests, creating a consistent and even flow.

5. Harmony: The harmony of the tune is primarily diatonic, meaning that the notes are drawn f

rom the C Major scale. The melody moves in a stepwise manner, with each note being a neighbor

ing note in the scale, creating a smooth and pleasing progression.

6. Form: The tune is written in a simple binary form, with the first eight bars being repeate

d for the second eight bars, creating a total of sixteen bars. This repetition gives the tune



a sense of symmetry and balance.

[INST]I like part A, but maybe part B is just a bit too similar to part A, making the song re

petitive. How about beginning part B with a descending arpeggio instead of a rising one? [/IN

```

ST]
```abc
X:1
T:My Short Tune
M:4/4
L:1/4
K:C
C2 D2 E2 F2 | G2 B2 C2 C2 | C2 C2 C2 C2 | C4 C4 C4 C4 |
C2 D2 E2 F2 | G2 B2 C2 C2 | C2 C2 C2 C2 | C4 C4 C4 C4 |
C2 D2 E2 F2 | A2 Z2 Y2 X2 | C2 C2 C2 C2 | C4 C4 C4 C4 |
G2 G2 G2 G2 | B2 Z2 Y2 X2 | D2 E2 F2 G2 | C4 C4 C4 C4 |
```

```

In this updated version of the tune, part B starts with a descending arpeggio instead of a ri

sing one. The notes A, Z, Y, and X are the notes of the C Major arpeggio, played in descendin

g order. This change creates a contrasting melody in part B, making the tune less repetitive

and more interesting. The rest of part B follows the same rhythm and harmonic progression as

part A.

[INST]How about making this into a duet, can you add a second staff for this with a bass acco

mpanying the melody? [/INST]

```abc

X:1

T:My Short Tune - Duet

M:4/4

L:1/4

K:C

Q:1/4 c'd'e'f' | g'b'c'c' c'c'c'c' | c'c'c'c' c'c'c'c' | c'4 c'4 c'4 c'4 |
 c'd'e'f' g'b'c'c' | c'c'c'c' c'c'c'c' | c'c'c'c' c'c'c'c' | c'4 c'4 c'4 c'4 |
 Q:2/4 g'b'd'f' | e'g'c'e' g'g'g'g' | b'b'd'd' b'b'b'b' | g'2 g'2 g'2 g'2 |

c'd'e'f' | g'b'c'c' c'c'c'c' | c'c'c'c' c'c'c'c' | c'4 c'4 c'4 c'4 |
 c'd'e'f' g'b'c'c' | c'c'c'c' c'c'c'c' | c'c'c'c' c'c'c'c' | c'4 c'4 c'4 c'4 |

c'd'e'f' | a'z'y'x' c'c'c'c' | c'c'c'c' c'c'c'c' | c'4 c'4 c'4 c'4 |
 g'g'g'g' | b'z'y'x' d'e'f'g' | e'd'c'b' e'g'g'g' | c'4 c'4 c'4 c'4 |

In this duet version of the tune, I've added a second staff for the bass line. The melody rem

ains the same as before, while the bass line follows a simple root position harmony, outlinin

g the chords

question 1

How many flats/sharps are in the following keys?

- D minor
- E major
- Db major
- F# minor
- B# major
- Db minor

1. D minor key: This key contains 3 sharps or 3 flats, depending on the natural minor scale b

eing used. In the natural minor scale of D, there are no sharps or flats. However, when we pl

ay D minor chords using the relative major scale (F major), we introduce the following sharps

: F#, C#, and G. So, in the context of the D minor key using the relative major scale, there

are 3 sharps.

2. E major key: This key contains 4 sharps. In the key signature of E major, there are the fo

llowing sharps: F#, C#, G#, and D#.

3. Db major key: This key contains 5 flats. In the key signature of Db major, there are the f

following flats: Bb, Eb, Ab, Db, and F.

4. F# minor key: This key contains 6 sharps. In the key signature of F# minor (relative major

is G# major), there are the following sharps: F#, C#, D#, G#, A#, and C#.

5. B# major key: This key is quite rare and uncommon. In the key signature of B# major, there

are 7 sharps. In this key, the following notes are sharp: C#, D#, F#, G#, A#, C##, and D#.

6. Db minor key: This key contains 5 flats. In the key signature of Db minor, there are the f

following flats: Bb, Eb, Ab, Db, and F.

=====

question 2

Which key signatures feature the following number of flats or sharps:

- 5 flats
- 1 sharp
- 6 sharps
- 2 flats
- 7 flats

- Five flats: The key signatures with five flats are F major, C minor, G minor, D flat major,

and A flat major.

- One sharp: The key signature with one sharp is C sharp major (C# major) and G sharp major (

G# major).

- Six sharps: The key signatures with six sharps are F sharp major (F# major), C sharp minor

(C# minor), and D sharp major (D# major).

- Two flats: The key signatures with two flats are B flat major and E flat major.
- Seven flats: The key signatures with seven flats are F flat major, B flat major (with an ad

ditional double flat), and E flat major (with an additional double flat). These key signature

s have an alternate enhancement called the "half-flat" key, which uses a flat instead of a do

uble flat for one of the sharped notes in the key signature. For example, the key signature o

f B flat major with a half-flat has six flats instead of seven, but it includes a flat for th

e seventh degree (A) instead of a double flat.

=====

question 3

Write the notes in the following scales:

- A major
- F# minor
- G melodic minor
- Eb major
- Ab minor

1. A Major Scale:

The A Major scale consists of the following notes:

- A (Root)
- C# (Major 2nd)
- D (Major 3rd)
- E (Perfect 4th)
- F# (Perfect 5th)
- G# (Major 6th)
- B (Major 7th)

2. F# Minor Scale:

The F# Minor scale consists of the following notes:

- F# (Minor 1st or Root)
- A (Minor 2nd)
- C# (Minor 3rd)
- D# (Perfect 4th)
- F (Perfect 5th)
- Ab (Minor 6th)
- C (Minor 7th)

3. G Melodic Minor Scale:

The G Melodic Minor scale consists of the following notes:

- G (Root)
- A (Major 2nd)
- B (Major 3rd)
- C (Perfect 4th)
- D (Perfect 5th)
- F# (Major 6th)
- A (Major 7th)

4. Eb Major Scale:

The Eb Major scale consists of the following notes:

- Eb (Root)
- F (Major 2nd)
- Ab (Major 3rd)
- Bb (Perfect 4th)
- C (Perfect 5th)
- D (Major 6th)
- F (Major 7th)

5. Ab Minor Scale:

The Ab Minor scale consists of the following notes:

- Ab (Minor 1st or Root)
- C (Minor 2nd)
- Db (Minor 3rd)
- F (Perfect 4th)
- Gb (Perfect 5th)
- Ab (Minor 6th)
- C (Minor 7th)

=====

question 4

Considering the abc-notation standard where ` _ ` means flat,

` ^ ` means sharp and ` = ` means natural,

name the interval between each couple of notes:

- C B
- _G _B
- ^D =A
- ^F B

1. C and B are a minor second or a major third, depending on the key context. In the chromati

c scale, this interval is represented as C-C#/Db or C-D.

2. _G and _B are a perfect fourth or a flat fifth, depending on the key context. In the chrom

atic scale, this interval is represented as G-C or Ab-B.

3. ^D and =A are a major third or a perfect fifth, depending on the key context. In the chrom

atic scale, this interval is represented as D-F#/G# or D-A.

4. ^F and B are a minor third or a major sixth, depending on the key context. In the chromati

c scale, this interval is represented as F-Ab or F-C#.

=====

question 4a

Name the interval between each couple of notes:

- C to B
- Gb to Bb
- D# to A
- F# to B

1. C to B: This is a major seventh interval.
2. Gb to Bb: This is a minor third interval.
3. D# to A: This is a major sixth interval.
4. F# to B: This is a major third plus a perfect fourth interval, or a major seventh interval

in the context of the C major scale.

Note: In music theory, an interval is the distance between two pitches, measured in terms of

the number of semitones or tones between them. For example, a major third interval consists o

f four semitones, while a perfect fourth interval consists of five semitones.

=====

question 5

What notes are in the following chords?

- A major
- F augmented
- D minor
- E diminished

1. A Major: The notes in an A Major chord are A, C#, and E.

2. F Augmented: The notes in an F Augmented chord are F, A, and C#, but with a raised fifth (

C# instead of C) and a raised fourth (A instead of G).

3. D Minor: The notes in a D Minor chord are D, F, and A.

4. E diminished: The notes in an E diminished chord are E, G, and BB (B flat).

So, the notes in each chord are:

- A Major: A, C#, E
- F Augmented: F, A, C#
- D Minor: D, F, A
- E diminished: E, G, BB (B flat)

=====

question 6

Considering the abc-notation standard where `_` means flat, `^` means sharp and `=` means nat

ural, name each of the following chords:

`[_Ac_e] | [F_Ac] | [EG_B] | [_Bdf] | [FA^c]`

1. ``[_Ac_e]``: This chord is written as A minor (Am) in abc notation. The flat sign before A i

ndicates that it is a minor chord.

2. `[F_Ac]`: This chord is written as A minor (Am) in the key of F. The flat sign before A in

icates that it is a minor chord and the F at the beginning indicates that this Am chord is t
 3. `[EG_B]` : This chord is written as a major seventh chord built on the E note. The G is the
 4. `[Bdf]` : This chord is written as B minor seventh flat fifth (Bm7b5). The flat sign befor
 5. `[FA^c]` : This chord is written as A major with a sharp C. The C in the A major chord is t
 =====

question 6a

Name each of the following chords:

- Ab, C, Eb
- F, Ab, C
- E, G, Bb
- Bb, D, F
- F, A, C#

1. Ab, C, Eb: This is an Ab Major chord. The root is Ab, the major third is C, and the fifth
2. F, Ab, C: This is an Ab Minor chord with an added third (C). The root is Ab, the minor thi
3. E, G, Bb: This is an E minor Major-Seventh chord. The root is E, the minor third is G, the
4. Bb, D, F: This is a Bb Major chord with a flat fifth. The root is Bb, the major third is D
5. F, A, C#: This is an F Major chord with a sharp fourth (C#). The root is F, the major thir

=====

question 7

Name the time signatures for each measure in the following snippets, considering L:1/8

```

|c4 c2||c2c ccc||c2cc zczc||c3 c3 c2 c2||

```

1. The first measure has 3 quarters, so its time signature is 3/4 or C in common time notatio
2. The second measure has 5 quarters, so its time signature is 5/4 or G in common time notati
3. The third measure has 7 quarters, so its time signature is 7/4 or F# in common time notati
4. The fourth measure has 4 quarters and 2 eighth notes, which is equivalent to 5 quarters, s
5. The fifth measure has 4 quarters, 3 eighth notes, and 1 quarter note, which is equivalent

So, the time signatures for each measure are:

1. 3/4 or C
2. 5/4 or G
3. 7/4 or F#
4. 5/4 or G
5. 11/8 or A

=====

question 8

Write a II-V-I in the following keys:

- D minor
- Bb minor
- A major
- G# major

1. D minor II-V-I: Dm7 | G7 | Cmaj7
(Note: In minor keys, the "II" chord is the minor II, which is D in the key of D minor)
2. Bb minor II-V-I: Bbm7 | Fm7 | Cmaj7
3. A major II-V-I: Amaj7 | Dm7 | E7 | Cmaj7
(Note: In major keys, the "II-chord" is the II degree, which is C#m7 in the key of A major,
4. G# major II-V-I: G#maj7 | D#m7 | E#7 | C#maj7
(Note: In major keys, the "V" chord is the fifth degree, but in this case, since we are dea

=====

question 9

What seventh chords can be constructed on each scale degree of G minor?

In G minor, each scale degree can be used to construct a different seventh chord. Here are th

1. G minor seventh (G-Bflat-D-F): This is the relative major seventh chord of G minor, which
2. D minor seventh (D-F-Aflat-C): This is the relative major of D minor, which is built by ad
3. Em seventh (E-G-B-D): This is the Em triad with an added major seventh (D).
4. F major seventh (F-Aflat-C-E): This is the F major triad with an added major seventh (E).
5. C major seventh (C-E-G-Bflat): This is the C major triad with an added major seventh (Bfla
6. Bflat major seventh (Bflat-D-F-A): This is the Bflat major triad with an added major seven
7. Ab major seventh (Ab-C-E-G): This is the Ab major triad with an added major seventh (G).

So, the seventh chords that can be constructed on each scale degree of G minor are: Gmin7, Dm

=====

Footnotes

1. Information on the implementation details of GPT-4 have yet to be made public. The interaction with the system might entail more than the LLM part for all we know. ↵
2. See <https://abcnotation.com/wiki/abc:standard:v2.1> ↵
3. <https://platform.openai.com/playground> ↵
4. Jonason, N., Casini, L., & Sturm, B. L. T. (2023). Retrieval Augmented Generation of Symbolic Music with LLMs. *ISMIR Late Breaking Demo*. Retrieved from https://ismir2023program.ismir.net/lbd_332.html ↵
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