

# لغة الآر من الصفر إلى الإحتراف

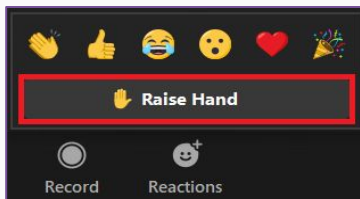
at first I was like...



Credit: Allison Horst

...but now it's like...





# قواعد الدورة

● كتابة الاسم في Google Doc

○ الإجابة على Icebreaker question

● إطفاء الجوال

● يُفضل فتح الكاميرا

● لا تتردد في طرح أي سؤال خلال الجلسة

● Slack

## مرحبا في كورس "لغة الأَر (R) من الصفر إلي الإحتراف"

المدرية: د بتول المزوق

الأسبوع: الأول

التاريخ: ٢٢ يونيو ٢٠٢٢

وصف الجلسة:

في هذه الجلسة سنتعرف على الخطة التعليمية مع بيان أهمية استخدام لغة آر (R) وإبراز دورها المميز في علم البيانات. لغة آر (R) هي لغة مفتوحة المصدر تُستخدم في التمثيل المرئي للبيانات وتعدديتها، بالإضافة إلى النمذجة. وقد احتلت أعلى المراتب في تصنيفات لغات البرمجة المستخدمة في علوم البيانات على مدار عدة سنوات، مما أدى إلى تزايد استخدامها.

تسجيل الأسماء

الاسم / المدينة / حسابات وسائل التواصل الاجتماعي لمن يرغب (twitter و GitHub وما إلى ذلك)

- 
- 
- 
- 
- 
- 
- 



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# Ice breaker

## سؤال عام لرفع التوتور وكسر الجليد ❄️

إذا كان لديك زر سحري على مكتبك ليحضر لك ما تريد ، فما الذي سيستدعيه؟

- بتول: رجعت لوقت ما قبل الكورونا ربيع ٢٠١٩
- عبدا

- خديجة: اطلب منه شخص يكتب لي ملخصات أو يقرأ للأطفال
- يخليني اكتب واقرا بانتظام: غزيل
- بثينه: كوب قهوة

- Azza: IceCream 🍦
- يحدد لي مكان الخطأ في أي تجربة معملية أعملها, بحيث ما يحتاج أطلع على مليون بروتوكول وأحيانا الخطأ تافه وما يستدعى





**AZZA ABDULLAH S.  
ALGHAMDI**  
Azza3bdullah

Azza3bdullah / README.md

- 🙋 Hi, I'm Azza

- 🧑 I'm interested in AIED
- 🏫 I'm currently working on Research
- 🌱 I'm currently learning AIED
- 🤝 I'm looking to collaborate on AI Researchers
- 😊 I'm looking for help with AI Community
- 💬 Ask me about AIED
- 📧 How to reach me: on e-mail
- 😄 Pronouns: (She)
- ⚡ Fun fact: Research & innovation
- 



**Ghozayel Elotteebi**  
Ghozayel

Ghozayel / README.md

Hi there 🙋

I'm Gzyl, interested in psycholinguistics, corpus linguistics, language acquisition, multimodal input and quantitative research method.

- 🧑 I'm a senior PhD student in the University of Nottingham, UK/ a lecturer in Jubail University College, KSA.
- 🌱 I'm currently learning R for data analysis and beyond.
- I've used PsychoPy, Pavlovia and GitLab for running studies online.
- 💬 Ask me about statistics for linguists using R, running studies using PsychoPy.
- 📧 How to reach me: @gzl\_atb
- 😄 Pronouns: she/her
- ⚡ Fun fact: I like lemons



Buthynah / README.md

Hi there 🙋

- 🧑 I'm Graduated from Qassim University, majoring in statistics
- 🌱 Interested in statistics and data science
- 💬 Ask me about statistics
- 📧 How to reach me : Twitter:buthynah\_h



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Credit: This slides and illustrations are taken from from the [Openscapes](#) blog GitHub for supporting, contributing, and failing safely by Allison Horst and Julia Lowndes

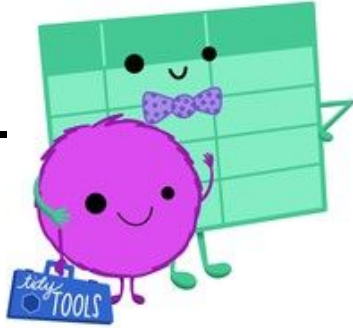
**A whole new world** of projects that feel more welcoming because we can contribute in many different ways



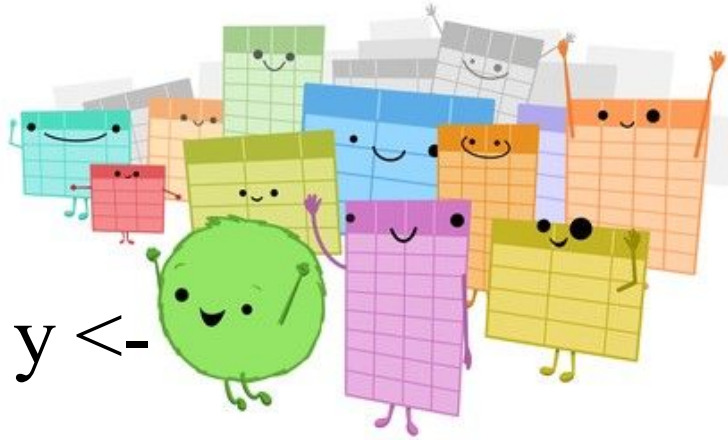
Credit: This slides and illustrations are taken from from the [Openscapes](#) blog GitHub for supporting, contributing, and failing safely by Allison Horst and Julia Lowndes

# صديقك في R

$x <-$



$y <-$



$x <- 1$

$x$  هو نفسه الرقم 1



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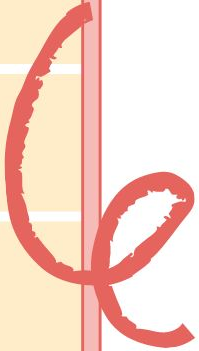
الجملة الفعلية في اللغة العربية تتكون  
من فعل وفاعل



الجملة الفعلية في اللغة العربية تتكون  
من فعل وفاعل



الجملة الفعلية في لغة الآر R تتكون:





الجملة الفعلية في اللغة العربية تتكون  
من فعل وفاعل



الجملة الفعلية في لغة الآر R تتكون:

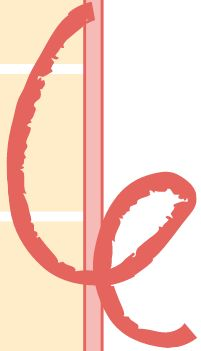
`function(arg, arg)`



الجملة الفعلية في اللغة العربية تتكون  
من فعل وفاعل

الجملة الفعلية في لغة الآر R تتكون:

`plot(data)`





# Packages



**Using Base R for your analysis  
and copy pasting your results  
into tables in Word**



**learning how to use dplyr  
visualize data with ggplot2  
and report your analysis in  
rmarkdown documents**



**wielding the entire might of the tidyverse**



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كيف أحمل الحُزم  
والمكتبات؟

# تنظيم بيئة المشروع



**Vince Buffalo**

@vsbuffalo · [Follow](#)



Managing your projects in a reproducible fashion doesn't just make your science reproducible, it makes your life easier.

4:26 AM · Apr 15, 2013



62



Reply



Copy link

[Read 1 reply](#)



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# تنظيم بيئة المشروع

 cluster_near_mkt.csv	2/20/2018 12:26	Microsoft Excel C...	38 KB
 cluster_weather.R	2/19/2018 13:25	R File	2 KB
 code.R	5/1/2017 14:37	R File	3 KB
 code_final.R	5/1/2017 14:37	R File	6 KB
 concordance_ipc.dta	1/23/2018 11:28	Stata Dataset	98 KB
 confusion.R	2/14/2018 11:35	R File	24 KB
 daily_rain_2013.dta	12/22/2017 07:52	Stata Dataset	185 KB
 dailyrain.do	2/15/2018 17:39	Stata Do-file	3 KB
 dailyrain.dta	5/5/2017 07:32	Stata Dataset	943 KB
 dailyrain_cluster.dta	2/21/2018 08:56	Stata Dataset	54,256 KB
 December.png	10/31/2017 12:03	PNG File	246 KB
 density.csv	11/3/2017 09:50	Microsoft Excel C...	11,418 KB
 density_plot_code.R	12/12/2017 17:41	R File	1 KB
 density_plots_cluster.docx	2/22/2018 19:17	Microsoft Word D...	963 KB
 Density0.png	11/4/2017 06:36	PNG File	501 KB
 density2.png	11/4/2017 06:34	PNG File	292 KB

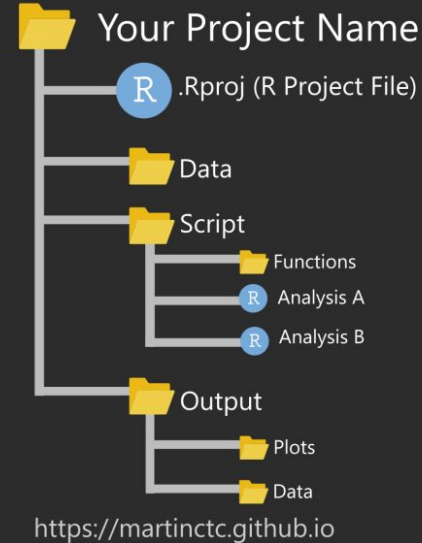


# تنظيم بيئة المشروع

**working directory** معنى

حيث سيبحث R عن الملفات التي  
تريد تحميلها وحيث سيضع أي  
ملفات تحفظها.

## A basic R project set up



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# metadata: YAML

Y(et) A(nother) M(arkup) L(anguage)

```
---  
author: Your name here  
title: Your title here  
output: html_document  
---
```

Credit: Intro to RMarkdown by Selcan Aydin in R-Ladies Dammam



Credit: Allison Horst



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# Make it pretty!

```
---  
author: Your name here  
title: Your title here  
output: html_document  
---
```

```
---  
author: Your name here  
title: Your title here  
output:  
  html_document:  
    toc: true  
    toc_float: true  
    theme: flatly  
    code_folding: hide  
    code_download: true  
---
```

Credit: Intro to RMarkdown by Selcan Aydin in R-Ladies Dammam



Credit: Allison Horst



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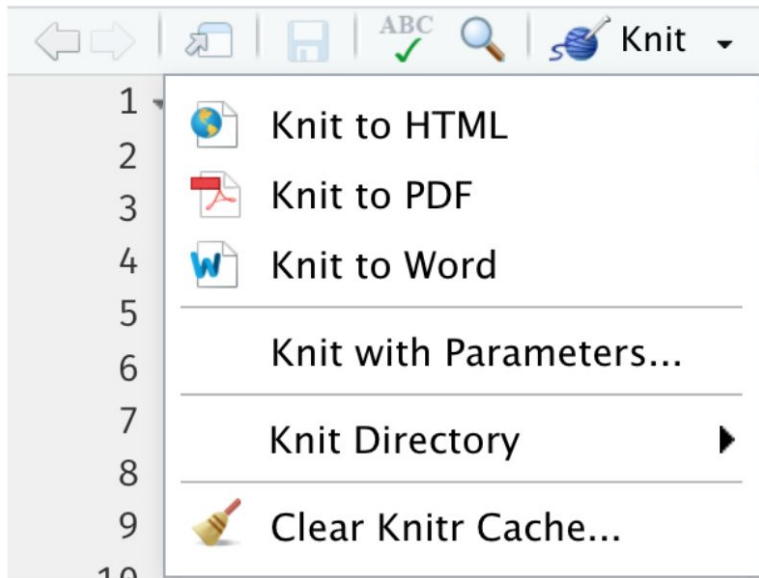


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# Knit to ...



```
---  
author: Your name here  
title: Your title here  
output:  
  html_document:  
    toc: true  
    toc_float: true  
    theme: flatly  
    code_folding: hide  
    code_download: true  
  word_document: default  
  pdf_document: default  
---
```

Credit: Intro to RMarkdown by Selcan Aydin in R-Ladies Dammam



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# Exercise 1:

---

- Create your own R Markdown File and switch between Visual Editor vs. Source Editor?
- Click on the knite! What happens?



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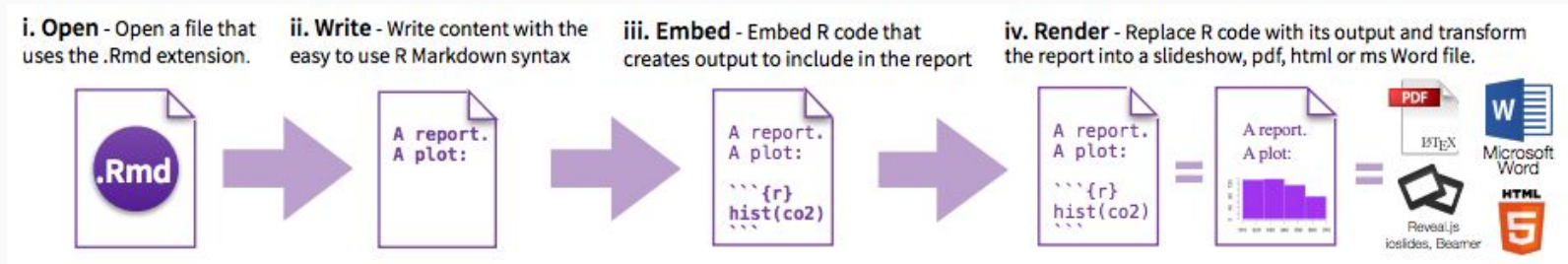
# Anatomy of an R Markdown File

---

The key to our reproducible workflow is using R Markdown files in RStudio rather than basic scripts to dynamically “knit” both code and paper narrative.

There are four distinct steps in the R Markdown workflow:

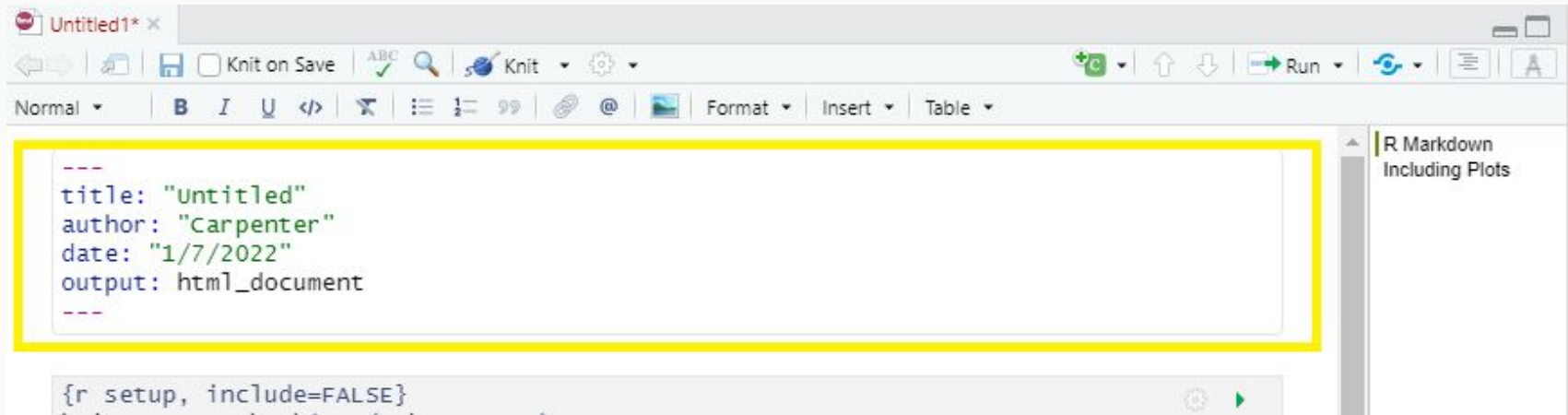
1. create a **YAML header** (optional)
2. write R Markdown-formatted **text**
3. add R **code chunks** for embedded analysis
4. render the document with **Knitr**



# What is YAML header?

---

YAML, pronounced “Yeah-mul” stands for “YAML Ain’t Markup Language”. YAML is a human-readable data-serialization language which, as its name suggests, is not a markup language.



```
---  
title: "Untitled"  
author: "Carpenter"  
date: "1/7/2022"  
output: html_document  
---
```

{r\_setup, include=FALSE}



# What is Formatted text?

---

You can use a variety of languages to format text and images in R Markdown

- HTML
- LaTeX
- CSS

```
output: html_document
---
```

```
{r_setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
```

### R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
{r_cars}
summary(cars)
```

### Including Plots

You can also embed plots, for example:

```
{r_pressure, echo=FALSE}
plot(pressure)
```

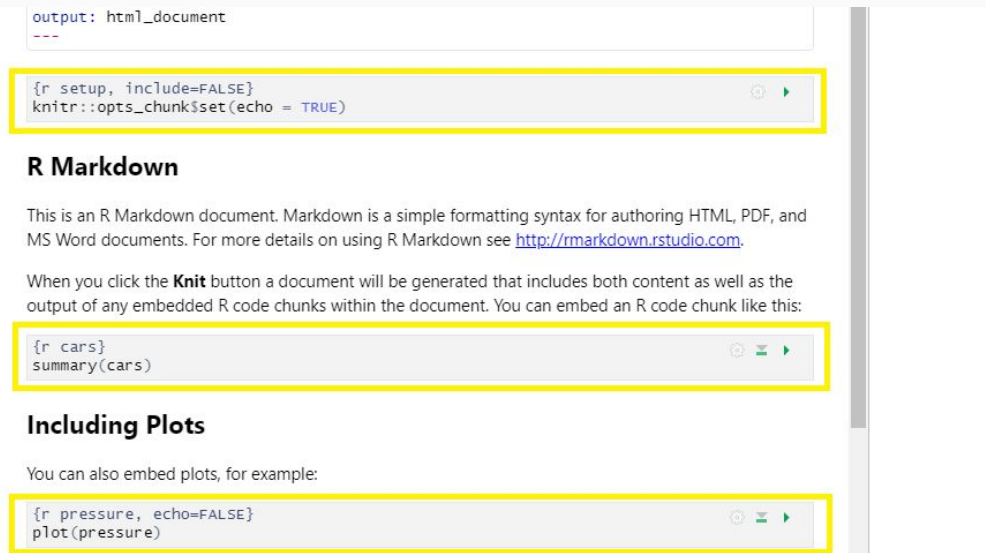




# What is Code Chunks?

You may code with many different languages in RStudio:

- R
- Python
- Bash
- SQL



The screenshot shows an R Markdown document with three code chunks highlighted in yellow. The first chunk is a setup chunk: `{r setup, include=FALSE} knitr::opts_chunk$set(echo = TRUE)`. The second chunk is an R code chunk: `{r cars} summary(cars)`. The third chunk is an R code chunk: `{r pressure, echo=FALSE} plot(pressure)`. The document content includes a section titled "R Markdown" with explanatory text and a link to <http://rmarkdown.rstudio.com>, and a section titled "Including Plots" with the text "You can also embed plots, for example:".

A complete list of compatible languages can be found at: <https://rmarkdown.rstudio.com/lesson-5.html>



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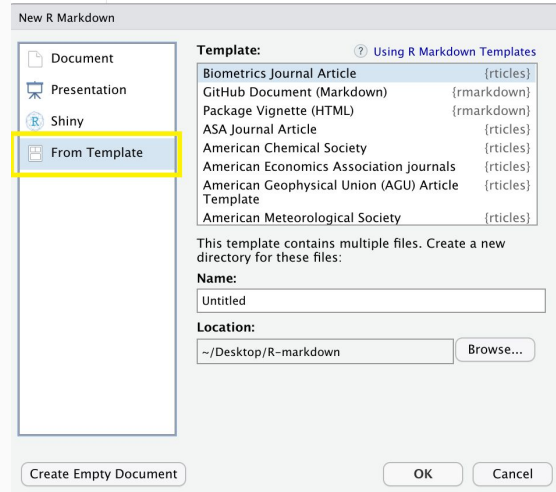


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# Finding Existing Templates?

---

On RStudio, load the `rticles` package by using the function `library(rticles)` (remember we've already installed the package earlier!). Once you've loaded the package, use the plus icon at the upper-left side of your screen to create a new document or proceed **with File > New File > R Markdown**



## Exercise 2:

---

- Create a chunk in python?
- Click on the knite! What happens?



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# Type of Outputs from R Markdown

## Bookdown

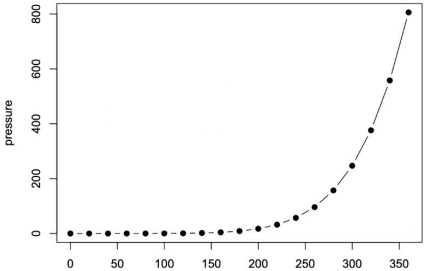
Authoring Books with R Markdown

- Preface
  - Why read this book
  - Structure of the book
  - Software information and conventions
  - Acknowledgments
- About the Author
- 1 Introduction
  - 1.1 Motivation
  - 1.2 Get started
  - 1.3 Usage
  - 1.4 Two rendering approaches
  - 1.5 Some tips
- 2 Components
  - 2.1 Markdown syntax
    - 2.1.1 Inline formatting
    - 2.1.2 Block-level elements
    - 2.1.3 Math expressions
  - 2.2 Markdown extensions by bookd...

### 2.4 Figures

By default, figures have no captions in the output generated by **knitr**, which means they will be placed wherever they were generated in the R code. Below is such an example.

```
par(mar = c(4, 4, 0.1, 0.1))  
plot(pressure, pch = 19, type = "b")
```



Temperature	Pressure
0	0
25	0
50	0
75	0
100	0
125	0
150	0
175	0
200	0
225	10
250	30
275	70
300	150
325	350
350	800

<https://bookdown.org/yihui/bookdown/>



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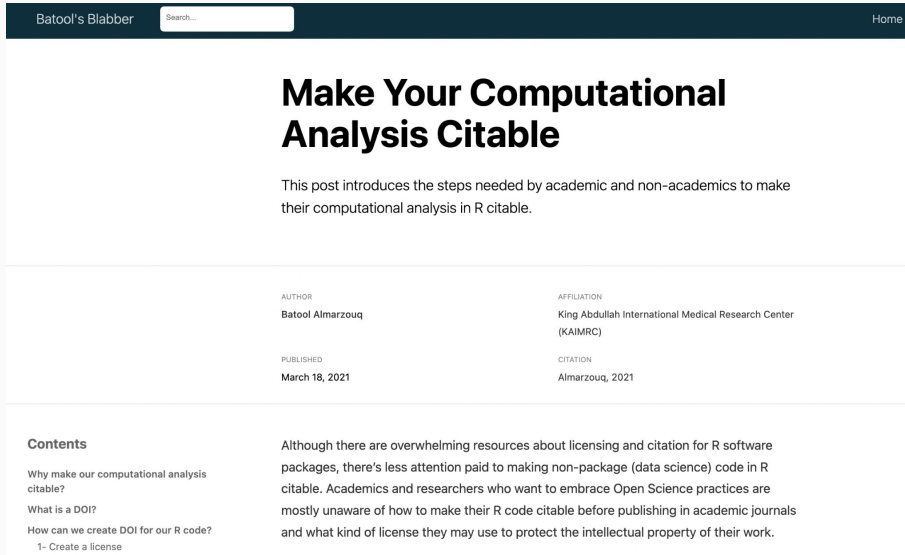


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# Type of Outputs from R Markdown

## Distill Website



The screenshot shows a web page from 'Batool's Blabber'. The main heading is 'Make Your Computational Analysis Citable'. Below the heading is a short paragraph: 'This post introduces the steps needed by academic and non-academics to make their computational analysis in R citable.' The page includes a metadata table with the following information:

AUTHOR	Batool Almarzouq	AFFILIATION	King Abdullah International Medical Research Center (KAIMRC)
PUBLISHED	March 18, 2021	CITATION	Almarzouq, 2021

Below the table is a 'Contents' section with two items:

- Why make our computational analysis citable?
- What is a DOI?

Below the contents is a section titled 'How can we create DOI for our R code?' with a sub-item: '1- Create a license'.

At the bottom of the article text, it says: 'Although there are overwhelming resources about licensing and citation for R software packages, there's less attention paid to making non-package (data science) code in R citable. Academics and researchers who want to embrace Open Science practices are mostly unaware of how to make their R code citable before publishing in academic journals and what kind of license they may use to protect the intellectual property of their work.'

<https://batool-blabber.netlify.app/>



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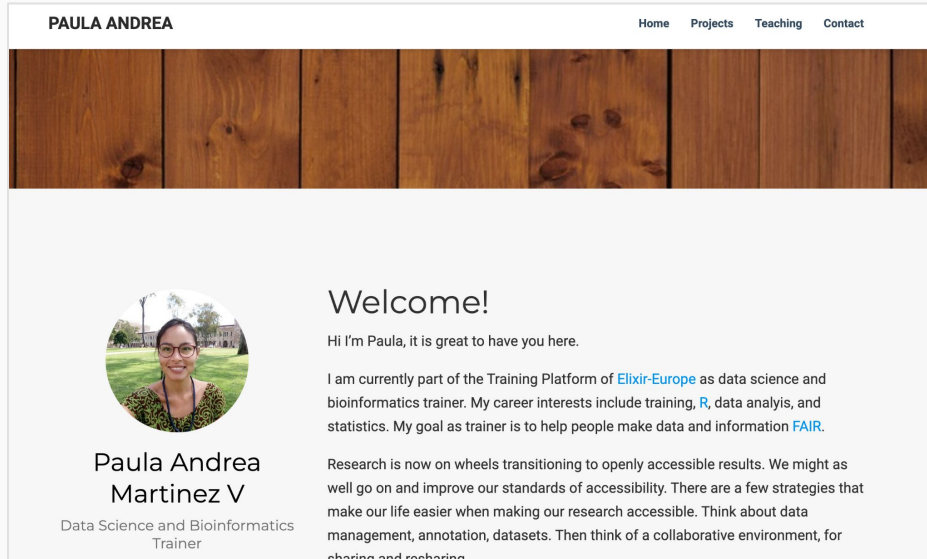
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# Type of Outputs from R Markdown

---

## Blogdown Website



PAULA ANDREA

Home Projects Teaching Contact

Paula Andrea  
Martinez V  
Data Science and Bioinformatics  
Trainer

### Welcome!

Hi I'm Paula, it is great to have you here.

I am currently part of the Training Platform of [Elixir-Europe](#) as data science and bioinformatics trainer. My career interests include training, [R](#), data analysis, and statistics. My goal as trainer is to help people make data and information [FAIR](#).

Research is now on wheels transitioning to openly accessible results. We might as well go on and improve our standards of accessibility. There are a few strategies that make our life easier when making our research accessible. Think about data management, annotation, datasets. Then think of a collaborative environment, for sharing and reusing.

<https://paulaandrea.rbind.io/>



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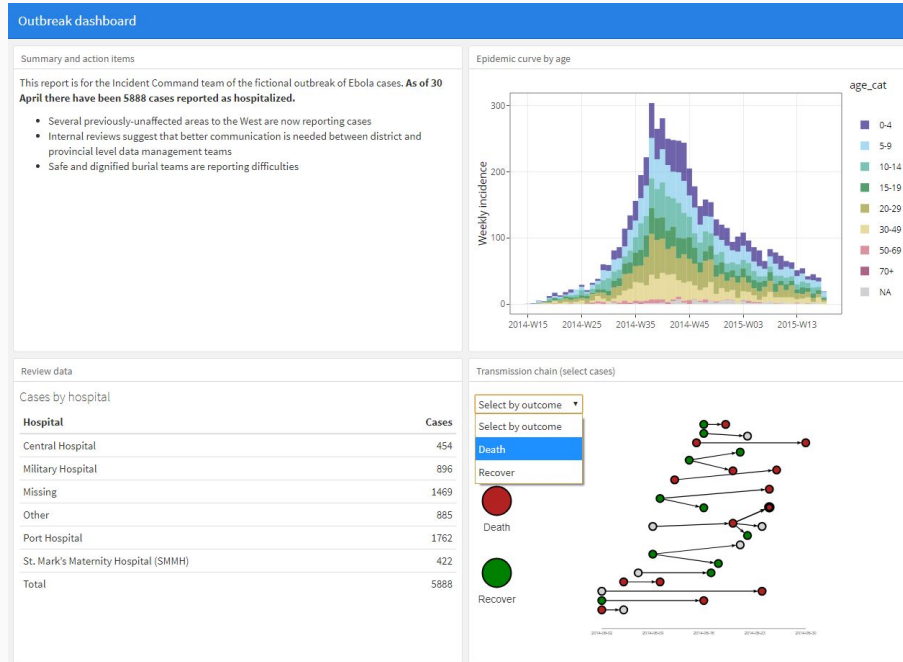


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# Type of Outputs from R Markdown

## Flexdashboard



<https://pkgs.rstudio.com/flexdashboard>



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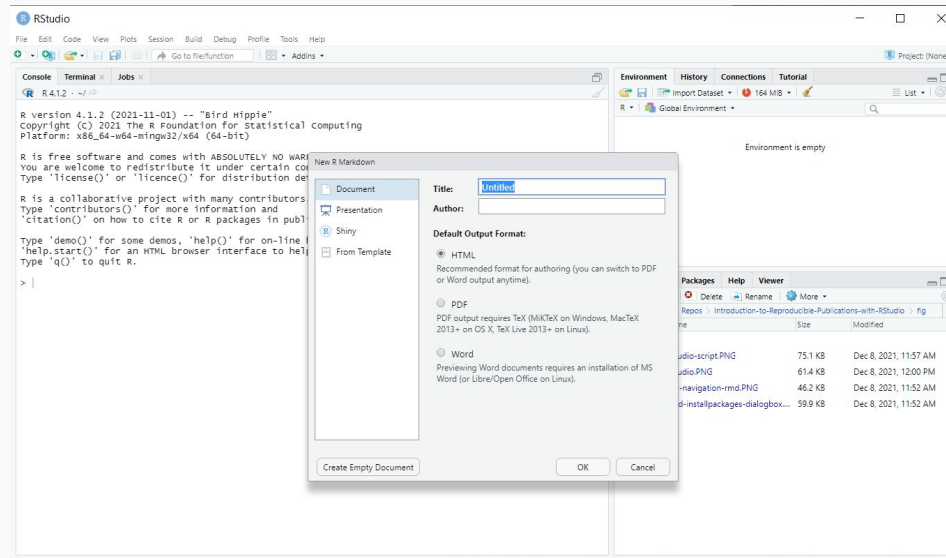


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# Your 1st R Markdown File:

A new R Markdown (مارك داون) document in RStudio  
**File > New File > R Markdown**



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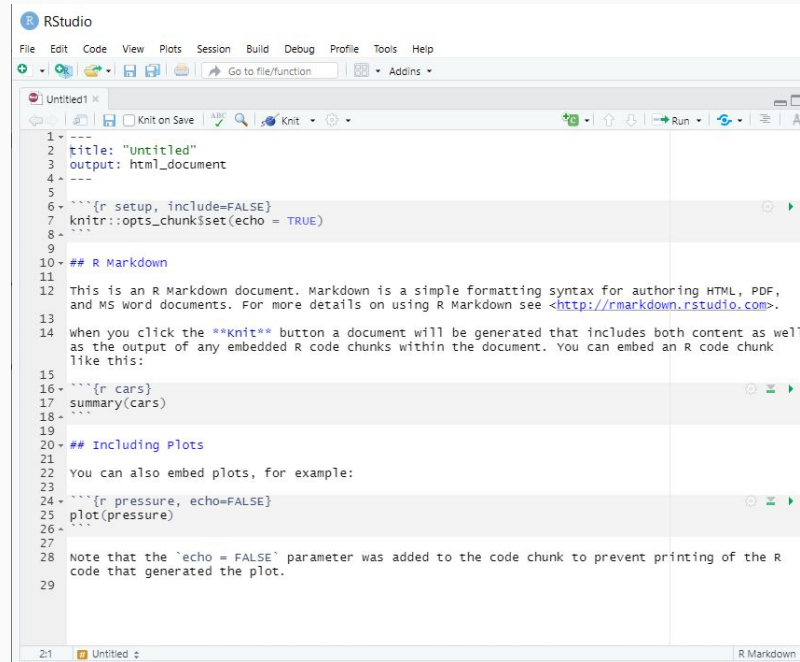




# Your 1st Markdown File:

---

This is the template you will end up with!



```
1 ----
2 title: "Untitled"
3 output: html_document
4 ----
5
6 ```{r setup, include=FALSE}
7 knitr::opts_chunk$set(echo = TRUE)
8 ```
9
10 ## R Markdown
11
12 This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF,
13 and MS word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.
14
15 when you click the **knit** button a document will be generated that includes both content as well
16 as the output of any embedded R code chunks within the document. You can embed an R code chunk
17 like this:
18
19 ```{r cars}
20 summary(cars)
21 ```
22
23 ## Including Plots
24
25 You can also embed plots, for example:
26
27 ```{r pressure, echo=FALSE}
28 plot(pressure)
29 ```
30
31 Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R
32 code that generated the plot.
```



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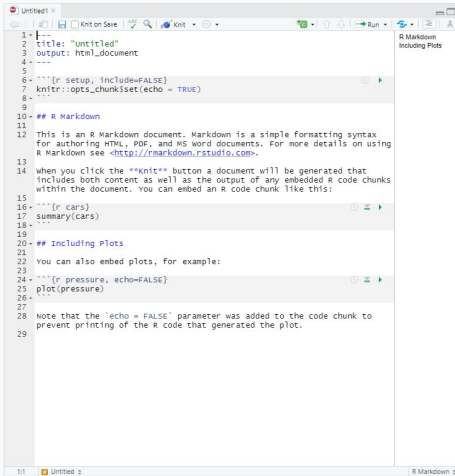
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# Visual Editor vs. Source Editor

---

RStudio released a new major update to their IDE in January 2020, which includes a new “visual editor” for R Markdown to supplement their original editor (which we will call the source editor) for authoring with R Markdown syntax.



```
1 #  
2 title: "Untitled"  
3 output: html_document  
4 ---  
5   
6 {r setup, include=FALSE}  
7 knitr::opts_chunkset(echo = TRUE)  
8   
9   
10 ## R Markdown  
11   
12 This is an R Markdown document. Markdown is a simple formatting syntax  
13 For authoring HTML, PDF, and MS word documents. For more details on using  
14 R Markdown see http://rmarkdown.rstudio.com.  
15   
16 When you click the "knitr" button a document will be generated that  
17 includes both content as well as the output of any embedded R code chunks  
18 within the document. You can embed an R code chunk like this:  
19   
20 {r cars}  
21 summary(cars)  
22   
23 ## Including Plots  
24   
25 You can also embed plots, for example:  
26   
27 {r pressure, echo=FALSE}  
28 plot(pressure)  
29   
30 Note that the 'echo = FALSE' parameter was added to the code chunk to  
31 prevent printing of the R code that generated the plot.
```



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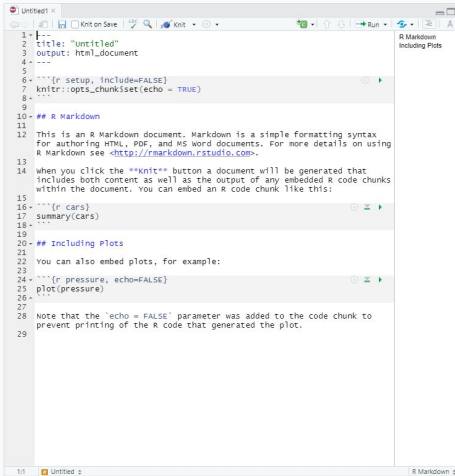
batool@liverpool.ac.uk



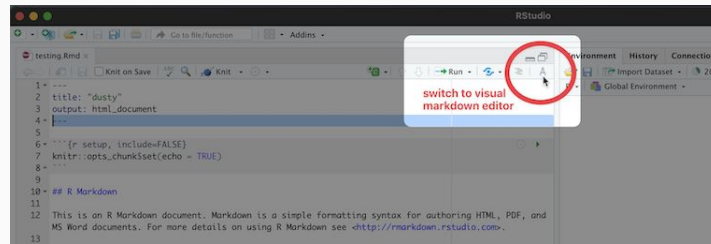
# Visual Editor vs. Source Editor

---

RStudio released a new major update to their IDE in January 2020, which includes a new “visual editor” for R Markdown to supplement their original editor (which we will call the source editor) for authoring with R Markdown syntax.



```
1 ---
2 title: "untitled"
3 output: html_document
4 ---
5 
6 [[[r setup, include=FALSE]
7 knitr::opts_chunkset(echo = TRUE)
8 ---
9 
10 ## R Markdown
11 
12 This is an R Markdown document. Markdown is a simple formatting syntax
13 For authoring HTML, PDF, and MS Word documents. For more details on using
14 R Markdown see <http://rmarkdown.rstudio.com>.
15 
16 When you click the "knit" button a document will be generated that
17 includes both content as well as the output of any embedded R code chunks
18 within the document. You can embed an R code chunk like this:
19 
20 [[[r cars
21 summary(cars)
22 ---
23 
24 ## Including Plots
25 
26 You can also embed plots, for example:
27 
28 [[[r pressure, echo=FALSE]
29 plot(pressure)
30 ---
31 
32 Note that the 'echo = FALSE' parameter was added to the code chunk to
33 prevent printing of the R code that generated the plot.
```



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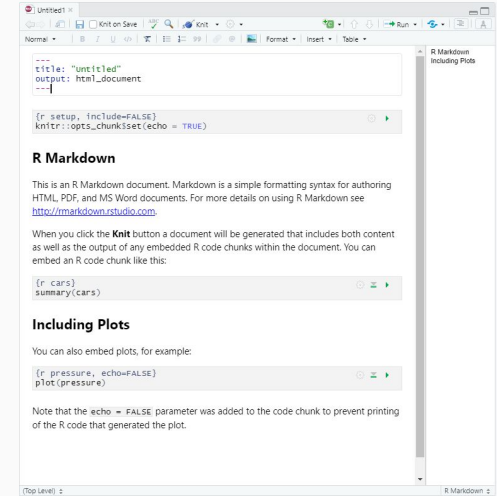
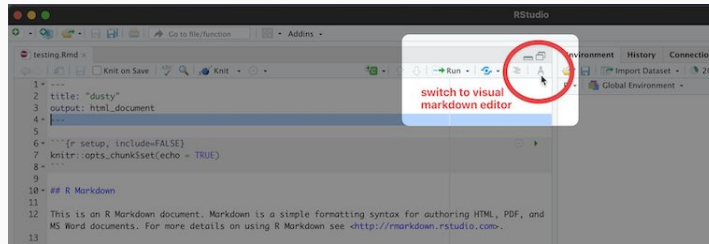
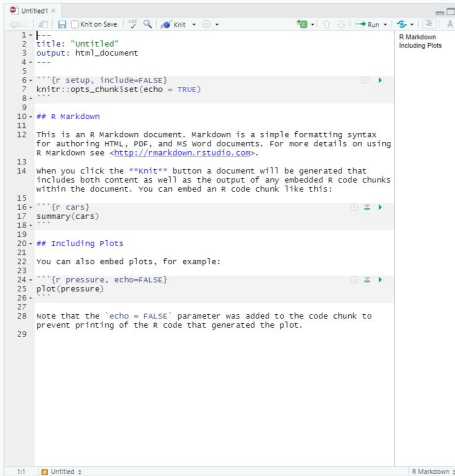


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# Visual Editor vs. Source Editor

RStudio released a new major update to their IDE in January 2020, which includes a new “visual editor” for R Markdown to supplement their original editor (which we will call the source editor) for authoring with R Markdown syntax.



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# Exercise 1:

---

- Create your own R Markdown File and switch between Visual Editor vs. Source Editor?
- Click on the knite! What happens?

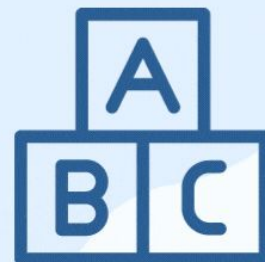


# البشر تتكلم بالحروف والأرقام

## لكن كيف تتكلم لغة R؟

تصنف لغة R أي معلومة إلى أحد هذه الأنواع:

النوع	التعريف	مثال
numerical	رقم متواصل كالطول	12.5
integer	رقم غير متواصل كالأعمار	23
string	كلمات كالأسماء	إيمان، بسمة
factor	أصناف أو فئات أو طبقات كأنواع الأزهار	توليب
logical	هل هي خاطئة أم صائبة	TRUE/FALSE



معنى هذا الرمز في لغة R

( و تُم ) = % > %

معنى هذا الرمز في لغة R

( و تُم ) = %>%

dataset %>%

select(**column**)



# References

---

- Openscapes blog GitHub for supporting, contributing, and failing safely by Allison Horst and Julia Lowndes
- Intro to RMarkdown by Selcan Aydın in R-Ladies Dammam



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# Feedback



- ما هو **أفضل** شيء تعلمته اليوم؟
- ما هو **أصعب** مفهوم تعرضت له في هذه الجلسة؟
- ما هو الشيء الذي تحب ان **يتحسن** في الجلسات القادمة؟

