

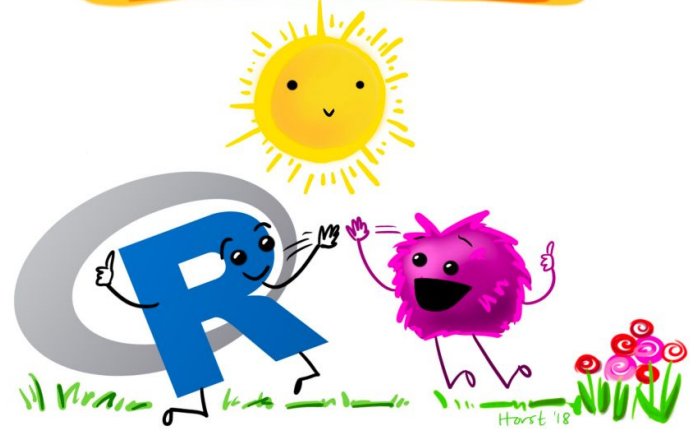
لغة الآر من الصفر إلى الإحتراف

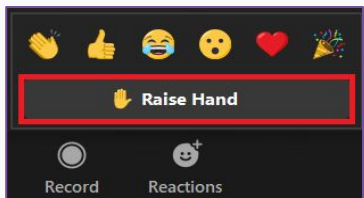
at first I was like...



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 الأر (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 وتعدينها، 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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بتول المرزوق

Community Lead



Subject Matter Experts (SME)



Committee member



Honorary research Fellow



UNIVERSITY OF
LIVERPOOL



Core contributor



Education
Committee



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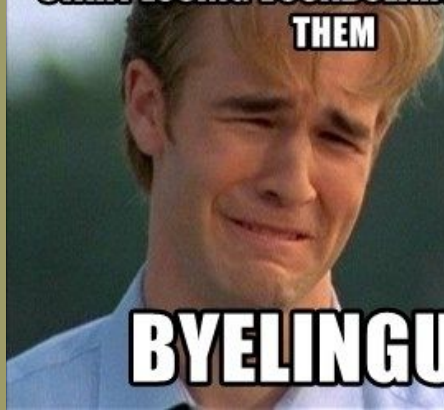
بتول المرزوق

when you find what the problem with your code is after 6 hours of debugging and realise it's a spelling mistake

Byelilingual:

(adj.) When you speak two languages but start losing vocabulary in both of them.

WHEN YOU SPEAK TO LANGUAGES BUT
START LOSING VOCABULARY IN BOTH OF
THEM



memegenerator.net made with mematic



@batool664 @OpenSciSaudi



تعارف بين المشاركين



- ❖ الأسم
- ❖ التخصص ومجال العمل
- ❖ لماذا ترغب بتعلم لغة الآر (R) ؟

Credit: japanesetactics



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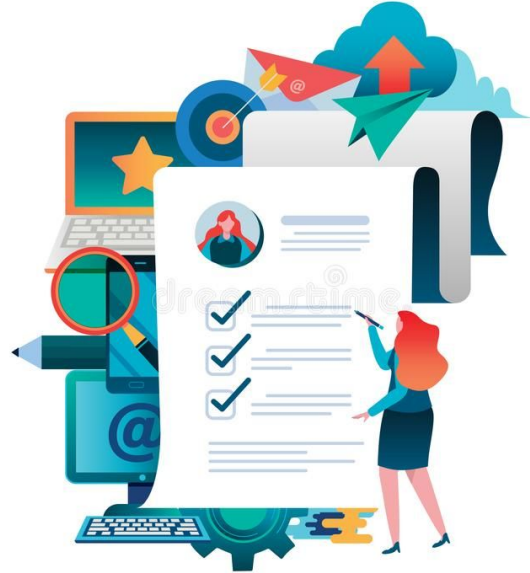


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فهم المشاركين!

أكمل هذا الاستبيان معا



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For learners, R can feel like...



Credit: Allison Horst



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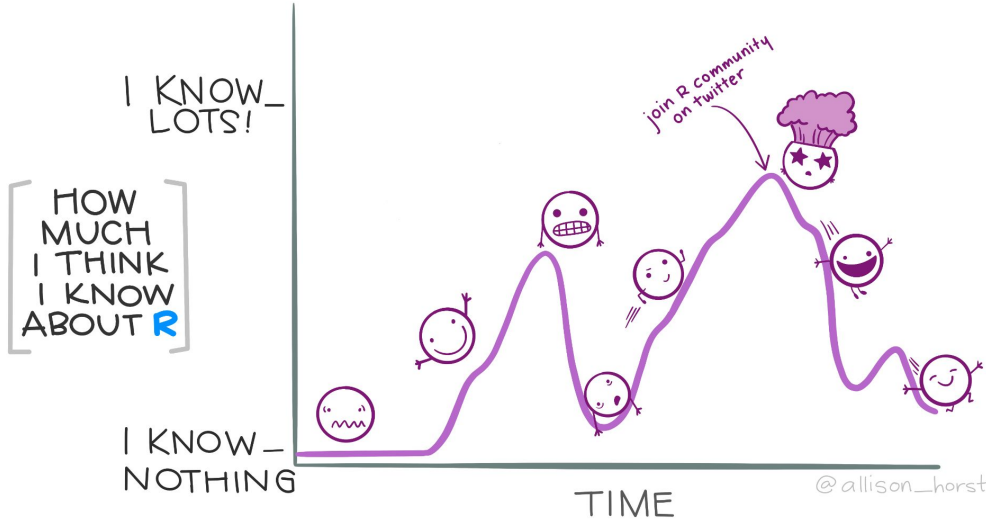
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ماهي صعوبة اللغة R؟

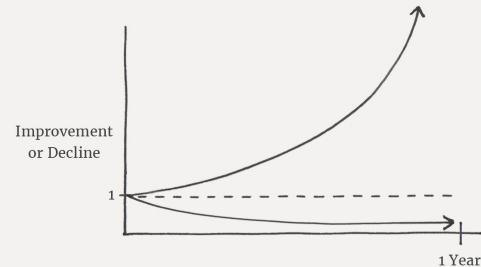


Credit: Allison Horst

The Power of Tiny Gains

1% better every day $1.01^{365} = 37.78$

1% worse every day $0.99^{365} = 0.03$



JamesClear.com



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هدف هذا الكورس ؟



Credit: Allison Horst

- تطوير **مهارات** المتدرب ليتمكن من ممارسة البرمجة بكل سلاسة وسهولة
- **ناشط** في مجتمعات الآر العالمية
- **متكلم** في مؤتمرات لغة الآر العالمية
- **مطور** في حُزم لغة الآر
- **مُساهم** في البرمجيات المفتوحة
- **سفير** في المجتمع العربي عن طريق مدونة عربية في لغة الآر



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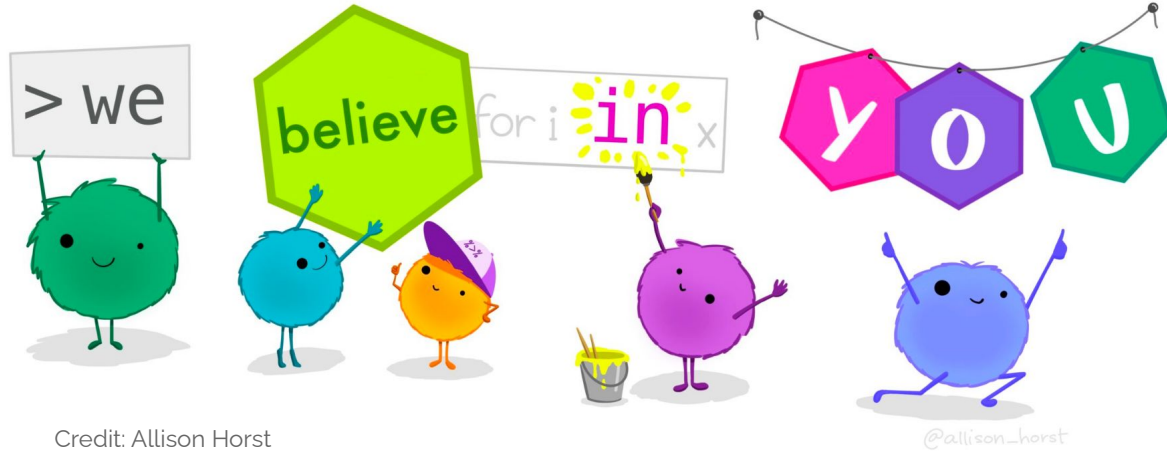
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remote R learners,



Credit: Allison Horst

@allison_horst

أمارس لغة الآر (R) لأنها



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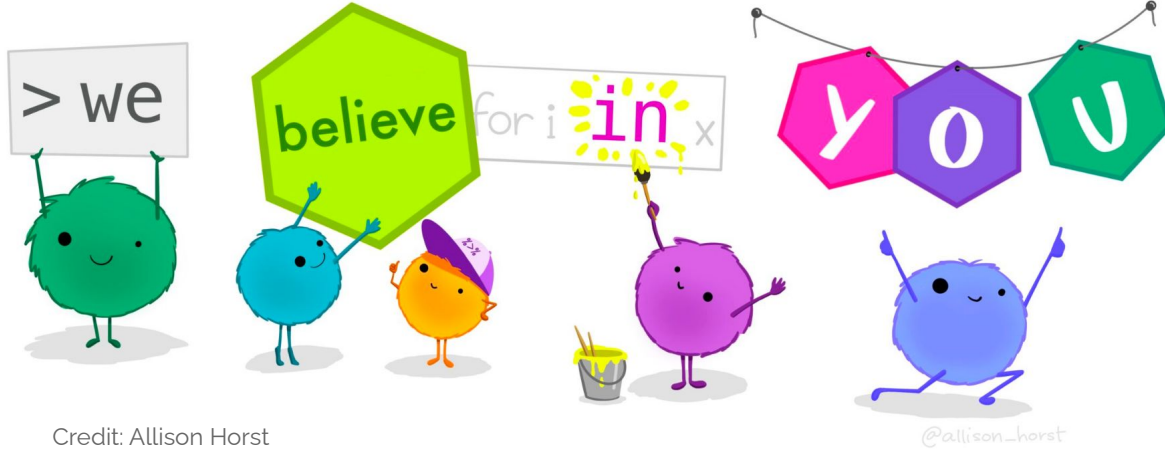
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remote R learners,



Credit: Allison Horst

أمارس لغة الآر (R) لأنها مطلوبة ومهمة في تخصصي!



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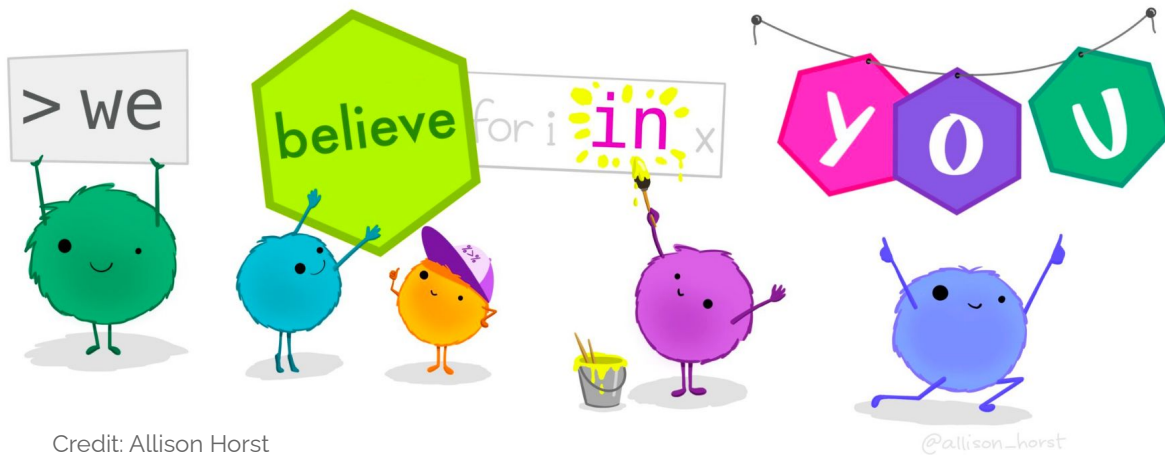
www.osc-ksa.com



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remote R learners,



Credit: Allison Horst

@allison_horst

أمارس لغة الآر (R) لأنها ~~مطلوبة ومهمة في تخصصي!~~



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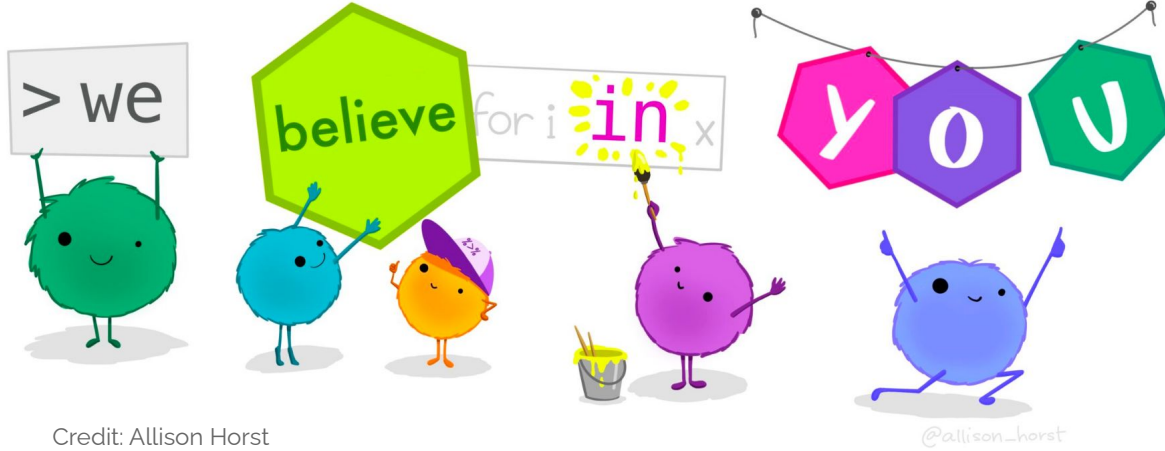
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remote R learners,



Credit: Allison Horst

@allison_horst

أمارس لغة الآر (R) لأنها ممتعة وتتمتع بمجتمع متعاون وضخم!



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www.jung-agency.com

jung.

Love
what
you
do.

Arg. Agentur für Marken & Design



ماهي أخطائي عند تعلمي لغة R لأول مرة ؟



- مشاهدة فيديوهات بدون تطبيق (100days of code) ❌
- عدم معرفة أين اسأل و كيفية صياغة الأسئلة ؟ ❌
- عدم الإنخراط مع مجتمع الآر (R) الدولي ❌



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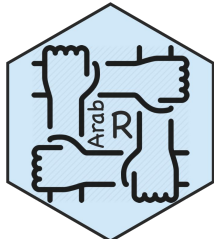
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جمعيات ومجتمعات في لغة R ؟



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(R) جماعات الممارسة



Alice Data @alice_data · May 26, 2017

Open conversation about the importance of communities - thanks @Shannon_E_Ellis for hosting #runconf17



1 2 2



Alice Data @alice_data

Replying to @alice_data and @Shannon_E_Ellis

"The community is one of #rstats biggest asset"
@revodavid #runconf17

11:22 PM · May 26, 2017 · Twitter for iPhone



Credit: David Smith



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جماعات الممارسة



R-Ladies Community | Meetup.com

216

Chapters



100267

Members



61

Countries

R-Ladies Chapters Worldwide



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إستراحة قصيرة!



WHAT

ماهي لغة الآر (R)

مجتمع **ضخم** ومتعاون

عشرات الآلاف من
الحزم والمكتبات



مفتوحة المصدر

Vector Operation



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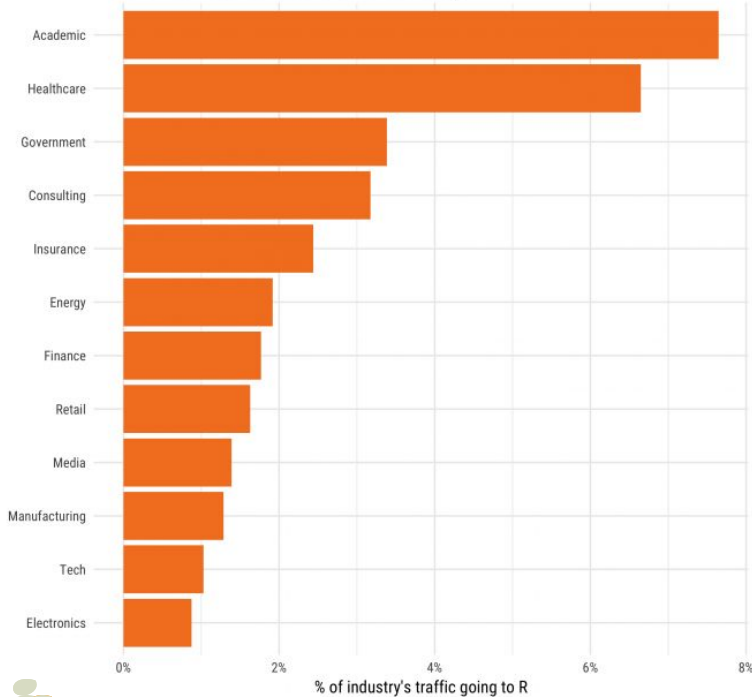
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أهمية لغة R ؟

Visits to R by industry

Based on visits to Stack Overflow questions from the US/UK in January-August 2017.
The denominator in each is the total traffic from that industry.



Companies that use R for Analytics



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معنى البرمجيات المفتوحة؟

البرامج المجانية \neq البرمجيات المفتوحة المصدر

Free Software \neq Open Source



أمثلة للبرمجيات المفتوحة

Examples for Open Source



معنى البرمجيات المفتوحة



Search or jump to...

rstudio / rstudio Public

Watch 248 Fork 970 Star 4k

Code Issues 1.2k Pull requests 11 Actions Projects 4 Wiki Security Insights

main 484 branches 3,001 tags

Go to file Add file Code

About

RStudio is an integrated development environment (IDE) for R

www.rstudio.com/products/rstudio/

Readme View license 4k stars 248 watching 970 forks

Releases 3,001 tags

Packages No packages published

Contributors 117 + 106 contributors

jeffvroom	Merge pull request #11460 from rstudio/bugfix/session-rpc-no...	40635f3	7 hours ago	39,080 commits
.devcontainer	support server development builds on Linux aarch64 (#10108)		7 months ago	
.github	a crash -> an crash		15 months ago	
.vscode	include Node.js extension pack in list of recommended VSCode exte...		13 months ago	
cmake/modules	example using node-addon-api for native module (#10618)		4 months ago	
dependencies	Fix build time quarto version check (#11401)		12 days ago	
docker	Fix build time quarto version check (#11401)		12 days ago	
package	Allow lldb debugging compiler code in R and R packages (#11428)		7 days ago	
scripts	additional cleanup		14 months ago	
src	For non-launcher sessions, need to pass the server rpc key		7 hours ago	
vagrant	Update minimum supported R version to 3.3.0		3 months ago	
version	Create new NEWS.md file. Update branch buildtype, calversion, and ...		2 days ago	
.dockerignore	Exclude wget hsts file from windows docker image		last month	
.editorconfig	create dockerrfile, run as rstudio not root		15 months ago	
.gitattributes	update .gitattributes		3 years ago	
.gitignore	Electron preference defaults and legacy priority (#10846)		3 months ago	
.gitmodules	Remove dead git submodule		10 years ago	

Open LICENSE



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Track your work with GitHub

GitHub
R Studio®



Batool Almarzouq
BatoolMM

Ph.D. in Biochemistry. Experience in cancer bioinformatics, RNA-Seq, network biology, pathway enrichment, and integrated -omics analyses, Docker, HPC (She/her).

Edit profile

73 followers · 97 following

University of Liverpool
<https://batool-almarzouq.netlify.app/>
@batool664

Achievements



Pinned

Customize your pins

exonR Public
R package for generating beautiful and customizable plots for the exons and introns of any gene
R ☆ 10

DeepSulfation Public
It uses deep learning to predict sulfation sites from protein sequence.
Jupyter Notebook ☆ 4

PlantAI Public
This is a simple application which use a convolutional neural network (CNN) to characterise the plants in my home and help in taking care of them.
Jupyter Notebook ☆ 4

Collaborating-on-Open-Data-Science-Projects Public
This is the materials for a workshop titled "Collaborating in Open Data Science Projects", part of WIDS2021.
HTML 🗨️ 1

An-Open-Science-Approach-to-Machine-Learning Public
"An Open Science Approach to Machine Learning in Medical and Biological Research talk" in Saudi Data Community
JavaScript

EV11 Public
Study the phosphorylation of EV11 through MD
Python ☆ 2

22,425 contributions in the last year

Contribution settings

2022



Learn how we count contributions

Less More

NEW! View your contributions in 3D, VR and IRL!



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Track your work with GitHub



enrichment,
alyses, Docker,

Public

"An Open Science Approach to Machine Learning in Medical and Biological Research talk" in Saudi Data community

JavaScript

Study the phosphorylation of EVI1 through MD

Python ☆ 2

```
}  
  
.netlify.app/
```

22,425 contributions in the last year

Contribution settings ▾



2022

2021

2020

2019

[Learn how we count contributions](#)

Less More

NEW! view your contributions in 3D, VR and IRL!



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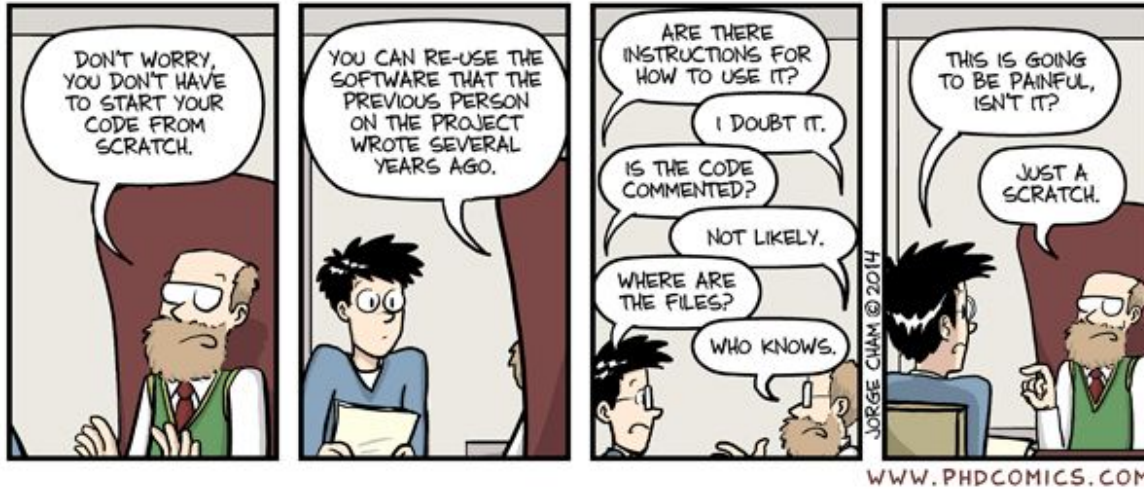
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لماذا تستخدم البرمجيات المفتوحة؟



Credit: Gify



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لماذا العلوم المفتوحة؟

البيانات الضخمة حولنا عادة ما تكون **صعبة الوصول** إليها أو محفوظة بشكل يجعلها **صعب الإنتفاع** منها



Illustration by [Ainsley Seago](#) (CC-BY 4.0).



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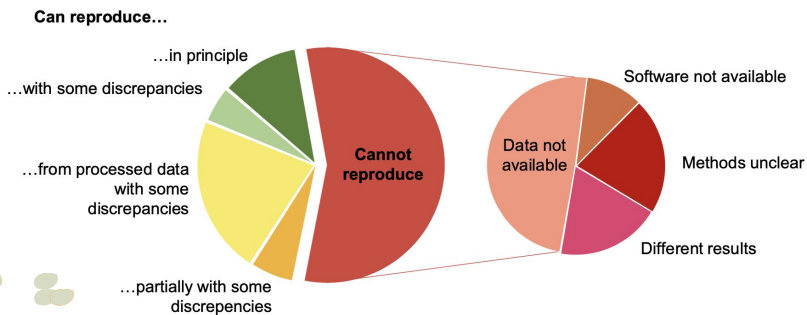
لماذا البرمجيات المفتوحة؟

NEWS | 09 December 2021

Half of top cancer studies fail high-profile reproducibility effort

Barriers to reproducing preclinical results included unhelpful author communication, but critics argue that one-time replication attempts don't tell the whole story.

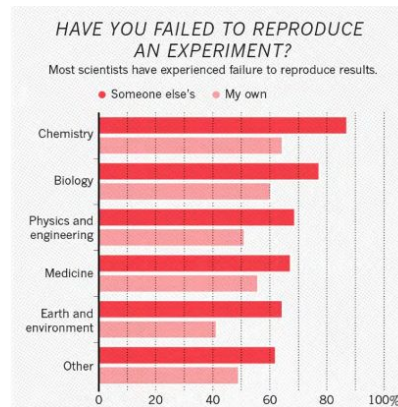
Replication of data analyses in 18 articles on microarray-based gene expression profiling published in Nature Genetics in 2005–2006:



The \$28 Billion a Year Research Reproducibility Crisis

October 19, 2015

The biggest crisis in the future of healthcare has nothing to do with the kind of issues that politicians talk about, such as payment systems and accessibility. Since cost-effective solutions to tragic and costly conditions like heart disease, dementia, diabetes, and cancer depend on bringing to market new treatments that rely upon genomics, nanotechnology, and molecular biology, the *biggest* problem is



Credits: Ioannidis et al. 2009



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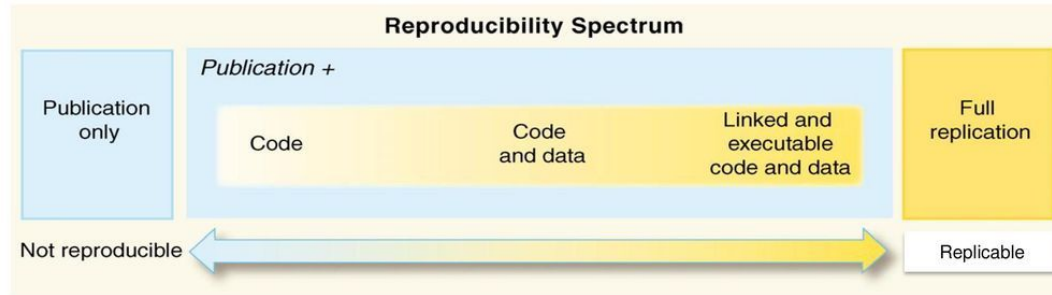
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BY

لماذا البرمجيات المفتوحة؟

Reproducibility requires openness



Open data
(البيانات المفتوحة)

Open Source
(البرمجيات المفتوحة)

- Global challenges impossible to meet without openness

Credit: DOI: 10.1126/science.1213847



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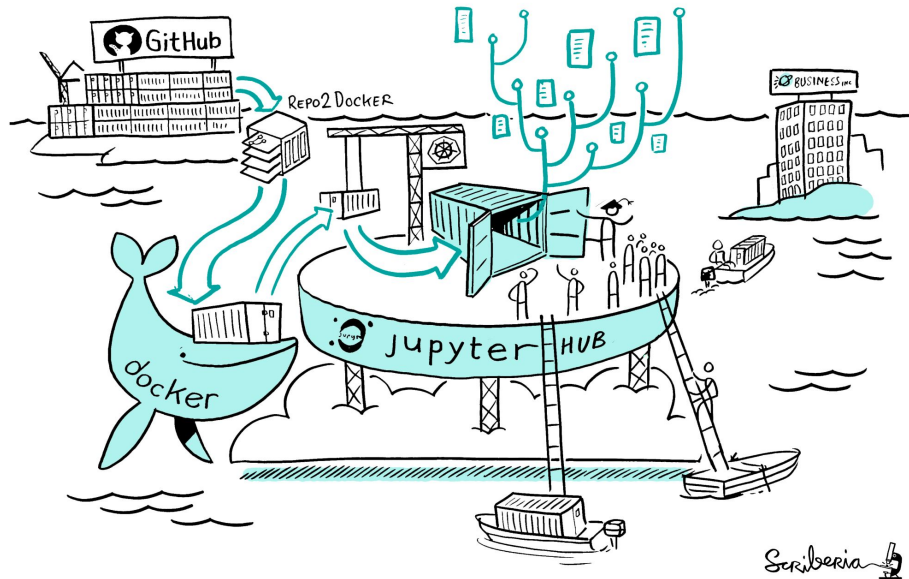
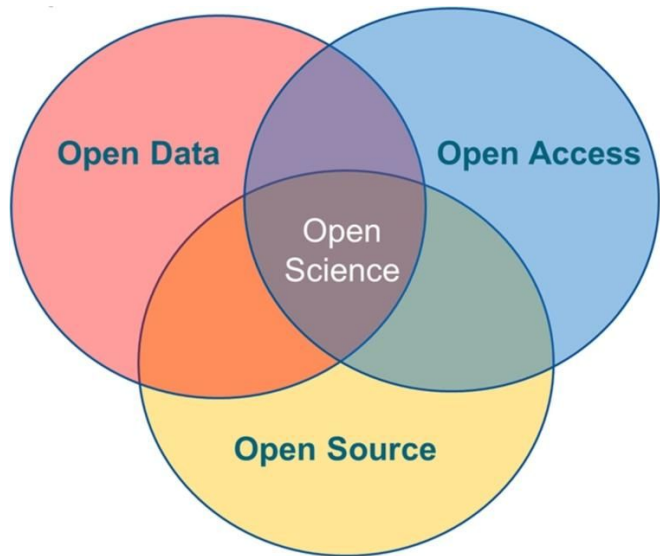
www.osc-ksa.com



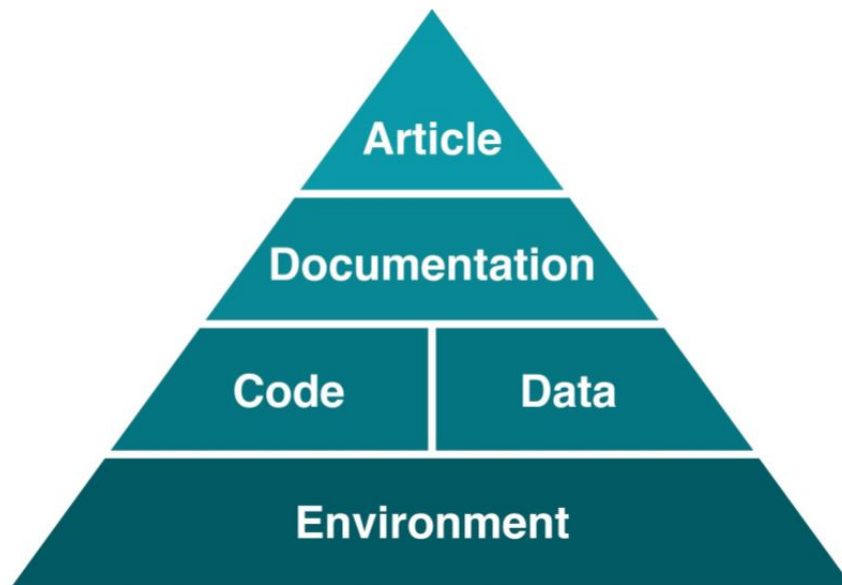
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لماذا البرمجيات المفتوحة؟



لماذا العلوم المفتوحة؟



Credit: [coderefinery](https://coderefinery.org/)



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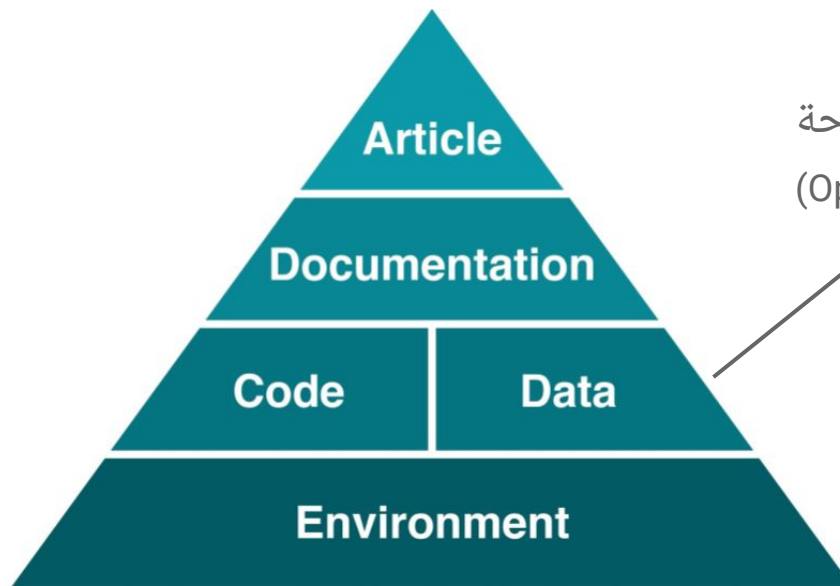


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لماذا العلوم المفتوحة؟



مبادئ العلوم المفتوحة
(Open Science practices)

Credit: [coderefinery](https://www.coderefinery.org/)



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BY

لماذا البرمجيات والعلوم المفتوحة؟

- ❖ بروز العمل العلمي بشكل أكبر وعلى نطاق أوسع خصوصا في المجتمعات العربية.
- ❖ البحث المفتوح يؤدي إلى **اكتشافات مفاجئة** ورؤى إبداعية.
- ❖ تعزيز **الطبيعة الجوهرية للعلم** والبحث.
- ❖ تعزيز **الخبرة** المتعلقة بالعلوم.
- ❖ ضمان **أساس استقرار العملية** البحثية.
- ❖ زيادة **الأثر الاجتماعي** للبحوث.
- ❖ منافع **اقتصادية**.



مناقشة في الغرف الجانبية!

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

المدرية: د. بتول المرزوق

الاسبوع: 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 وتعيينها، 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 في [twitter](#) و [GitHub](#) وما إلى ذلك

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-
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-

- هل سمعت سابقا بالبرمجيات المفتوحة؟
- ماهي أهم فوائد البرمجيات المفتوحة التي ادهشتك؟
- ماهو الفرق بين R و RStudio؟



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BY

ما الفرق بين R و RStudio ؟

R: Engine



RStudio: Dashboard



ما الفرق بين R و RStudio ؟

R Console

```
R version 2.15.2 (2012-10-26) -- "Trick or Treat"
Copyright (C) 2012 The R Foundation for Statistical Computing
ISBN 3-900051-07-0
Platform: i386-w64-mingw32/i386 (32-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

Natural language support but running in an English locale

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

[Previously saved workspace restored]

> ls()
[1] "b"      "Cars"
```

R Studio

Source

Environment/History

Files/Plots/Pkgs/Help/Viewer

Console/Terminal/Jobs

تحميل R و RStudio

يتم الحفاظ على R بواسطة فريق دولي من المطورين الذين يقومون بإتاحة اللغة من خلال صفحة الويب الخاصة بـ

The Comprehensive R Archive Network

The Comprehensive R Archive Network

Download and Install R

Precompiled binary distributions of the base system and contributed packages, **Windows and Mac** users most likely want one of these versions of R:

- [Download R for Linux \(Debian, Fedora/Redhat, Ubuntu\)](#)
- [Download R for macOS](#)
- [Download R for Windows](#)

R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.

Source Code for all Platforms

Windows and Mac users most likely want to download the precompiled binaries listed in the upper box, not the source code. The sources have to be compiled before you can use them. If you do not know what this means, you probably do not want to do it!

- The latest release (2022-04-22, Vigorous Calisthenics) [R-4.2.0.tar.gz](#), read [what's new](#) in the latest version.
- Sources of [R alpha and beta releases](#) (daily snapshots, created only in time periods before a planned release).
- Daily snapshots of current patched and development versions are [available here](#). Please read about [new features and bug fixes](#) before filing corresponding feature requests or bug reports.
- Source code of older versions of R is [available here](#).
- Contributed extension [packages](#)

Questions About R

- If you have questions about R like how to download and install the software, or what the license terms are, please read our [answers to frequently asked questions](#) before you send an email.



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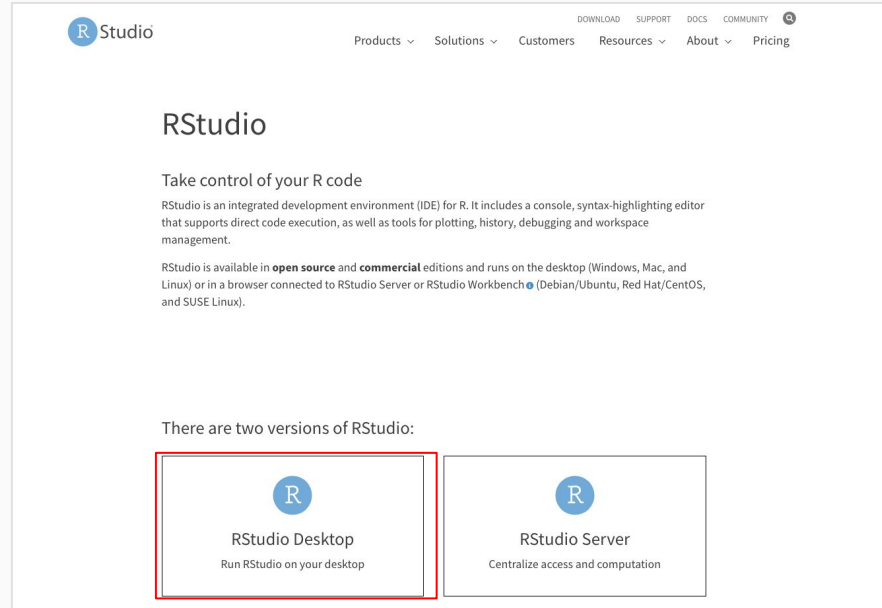


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تحميل R و RStudio

Download RStudio



The screenshot shows the RStudio website's download page. At the top left is the RStudio logo. To its right is a navigation menu with links for Products, Solutions, Customers, Resources, About, and Pricing. Further right are links for DOWNLOAD, SUPPORT, DOCS, and COMMUNITY. The main heading is "RStudio". Below it is the sub-heading "Take control of your R code". The text describes RStudio as an integrated development environment (IDE) for R, including a console, syntax-highlighting editor, and tools for plotting, history, debugging, and workspace management. It also mentions that RStudio is available in open source and commercial editions and runs on the desktop (Windows, Mac, and Linux) or in a browser connected to RStudio Server or RStudio Workbench. At the bottom, there are two boxes representing the versions of RStudio: "RStudio Desktop" (Run RStudio on your desktop) and "RStudio Server" (Centralize access and computation). The "RStudio Desktop" box is highlighted with a red border.

RStudio

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RStudio

Take control of your R code

RStudio is an integrated development environment (IDE) for R. It includes a console, syntax-highlighting editor that supports direct code execution, as well as tools for plotting, history, debugging and workspace management.

RStudio is available in **open source** and **commercial** editions and runs on the desktop (Windows, Mac, and Linux) or in a browser connected to RStudio Server or RStudio Workbench (Debian/Ubuntu, Red Hat/CentOS, and SUSE Linux).

There are two versions of RStudio:

 RStudio Desktop Run RStudio on your desktop	 RStudio Server Centralize access and computation
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تحميل R و RStudio

R Studio Desktop

	Open Source Edition	RStudio Desktop Pro
Overview	<ul style="list-style-type: none">• Access RStudio locally• Syntax highlighting, code completion, and smart indentation• Execute R code directly from the source editor• Quickly jump to function definitions• View content changes in real-time with the Visual Markdown Editor• Easily manage multiple working directories using projects• Integrated R help and documentation• Interactive debugger to diagnose and fix errors• Extensive package development tools	<p>All of the features of open source; plus:</p> <ul style="list-style-type: none">• A commercial license for organizations not able to use AGPL software• Access to priority support• RStudio Professional Drivers• Connect directly to your RStudio Workbench  instance remotely
Support	Community forums only	<ul style="list-style-type: none">• Priority Email Support• 8 hour response during business hours (ET)
License	AGPL v3	RStudio License Agreement
Pricing	Free	\$995/year
	DOWNLOAD RSTUDIO DESKTOP	DOWNLOAD FREE RSTUDIO DESKTOP PRO TRIAL
		Purchase Contact Sales



تحميل R و RStudio

	RStudio Desktop Open Source License	RStudio Desktop Pro Commercial License	RStudio Server Open Source License	RStudio Workbench Commercial License
	Free	\$995 /year	Free	\$4,975 /year (5 Named Users)
	DOWNLOAD Learn more	BUY Learn more	DOWNLOAD Learn more	BUY Evaluation Learn more
Integrated Tools for R	✓	✓	✓	✓
Priority Support		✓		✓
Access via Web Browser			✓	✓
RStudio Professional Drivers		✓		✓
Connect to RStudio Workbench remotely		✓		
Enterprise Security				✓
Project Sharing				✓
Manage Multiple R Sessions & Versions				✓



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RStudio Desktop 2022.02.3+492 - [Release Notes](#)

1. Install R. [RStudio requires R 3.3.0+](#)
2. Download RStudio Desktop. [Recommended for your system:](#)



DOWNLOAD RSTUDIO FOR MAC
2022.02.3+492 | 216.41MB

Requires macOS 10.15+ (64-bit)



All Installers

Linux users may need to [import RStudio's public code-signing key](#) prior to installation, depending on the operating system's security policy.

RStudio requires a 64-bit operating system. If you are on a 32 bit system, you can use an [older version of RStudio](#).



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What's your goal in learning R?

Levels of R Skill

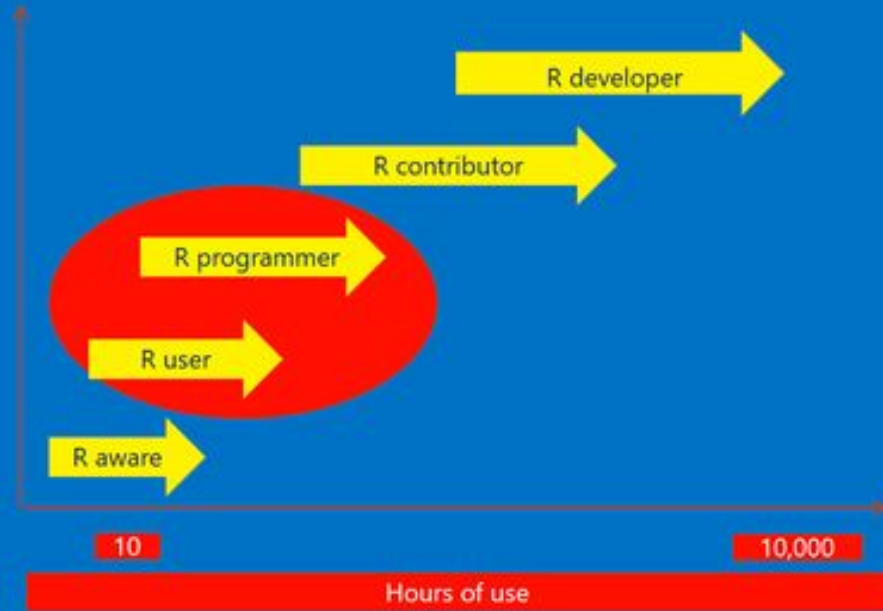
Write production grade code

Write an R package

Write code and algorithms

Use R functions

Use a GUI



The Malcolm Gladwell "Outliers" Scale



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المشاريع

- Develop **a new package** in R (e.g. your area of work)
- A **contribution** to base R, RStudio & tidyverse!
- Build a **blogdown** Website
- Build **a dashboard!**
- Create **a new educational resources for R** with bookdown/learnr
- Deliver **a talk/poster about your R journey or a new R project** in Conference/Meetup



المشاركات

R Weekly

TidyTuesday

Blog Post

Deliver a talk/poster in Conference/Meetup

Develop a package

Build a portfolio in GitHub and the Open Source Community

Watch RStudio and useR Conference talks

Best Practices in Programming with R

• Twitter



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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؟

الواجب

- تنزيل R/R Studio في الجهاز
- قراءة المقال التالي :
 - Data science as an atomic habit
 - مشاهدة:
 - Carl Howe & Greg Wilson | Data Science Education in 2022
- إكتب تأملاتك عن المقال والفيديو في Slack
- إكمال Feedback



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شكرا جزيلاً



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