Welcome to the notes page for the CODATA-RDA Research Data Science school August 5-12!

At the end of each module please complete the feedback form

https://forms.gle/GfQi8iurvpKeoQrR7

Software Carpentry Code of Conduct
https://docs.carpentries.org/topic_folders/policies/code-of-conduct.html

UNESCO Standard of Conduct
http://users.ictp.it/~staff/downloads/CODE_EN.pdf

Please deposit your **One Page Slide** at
https://drive.google.com/drive/folders/1zUBVVAuK_dVYpeqdEn7qGifLnHMyRoFz?usp=sharing

The **timetable** for the school is here:
https://docs.google.com/spreadsheets/d/1eoAub3N2ZkZEdxX7E5YGT5fIBxA1kFyVkR7m5zgfgZE/edit#gid=0.

Conference dinner Friday 9.
This will be held the Pizzeria Alla Fonda
https://www.google.co.uk/maps/dir/Adriatico+Guest+House+(ICTP),+Riva+Massimiliano+e+Carlotta,+Grignano,+UTI+Giuliana/Pizzeria+Ristorante+Alla+Fonda,+Viale+Miramare,+139,+34100+Trieste+TS/@45.6951642,13.7154728,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1s0x477b12c2a61ad7f9:0x278a6a8a1e455af1!2m2!1d13.7144018!2d45.7071737!1m5!1m1!1s0x477b6cb3285636d7:0x532f6376a23a8122!2m2!1d13.7512254!2d45.6832796!3e3

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Link for the Photos https://www.flickr.com/photos/183352361@N04/?

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| Twitter hash | https://drive.google.com/drive/folders/16fKpDXg-IjNZ0Tjzn5FgD8i6ZQL1COzo

| #datatrieste19 |
https://twitter.com/hashtag/dataTrieste19?src=hash
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Materials and Notes

❍ WELCOME DAY 1 ❍

Open and Responsible Science Citizenship - Monday 5 August 2019 AM

https://drive.google.com/file/d/1BsIOoETXICNCaeEAsp97p7c2VoHxnofT/viewfusp=sharing

At the end of open science module please complete the feedback form

https://forms.gle/GfQi8iurvpKeoQrR7

Photos of your groupwork feedback can be found here:
https://drive.google.com/file/d/1ap-v4q9qRp191Zixi4Jy-Y-qFosaVPcM/view?usp=sharing
https://drive.google.com/file/d/1QMr57cLh_V42HWg8rUXw6uRB3GthI08A/view?usp=sharing
https://drive.google.com/file/d/1v6R87Eh1SIRKURrrtsdZTeJ__jZ7QrIe/view?usp=sharing

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library(recommenderlab)movgen_matrix <- matrix(0, 9126, 18)
Author Carpentry ORCID Tutorial - Monday 5 August 2019 AM
https://authorcarpentry.github.io/orcid-profile/

BibTeX Needed for Exercise comes from
https://pure.royalholloway.ac.uk/portal/en/publications/transcriptomics-leveraging-a-mapreduce-algorithm-and-python-for-geneexpression-analysis-on-apache-1``spark(e5e4d853-de35-4bac-8a31-91ba10a75f3a)/export.html

AuithorCarpentry ORCID tutorial is online at https://auth`Qorcarpentry.github.io/orcid-profile/. (There is no printed packet to save trees!)
Gail Clement will remain in the Adriatico Lab from 11 to lunch and Monday evening from 7-8 pm to guide participants through this tutorial.
Otherwise, please complete on your own before Thursday so you are ready for the rest of the AuthorCarpentry sessions!

At the end of author carpentry I module please complete the feedback form

https://forms.gle/GfQi8iurvpKeoQrR7

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The Unix shell - Monday 5 August 2019 PM
http://swcarpentry.github.io/shell-novice/

Unix commands
ls — list items in current directory
ls -l — list items in current directory and show in long format to see permissions, size, and modification date
ls -a — list all items in current directory, including hidden files
ls -F — list all items in current directory and show directories with a slash and executables with a star
ls dir — list all items in directory dir
cd dir — change directory to dirlea
cd .. — go up one directory

cd / — go to the root directory
cd ~ — go to to your home directory
cd - — go to the last directory you were just in
pwd — show present working directory
man {command} Type **man rm** to read the manual for the **rm** command.
whatis {command} Give short description of command.
cat - let us see the content of a file

Cheat sheet for Unix: http://cheatsheetworld.com/programming/unix-linux-cheat-sheet/

Ethics exercise

A Command Line Interface (CLI) such as Bash requires training and practice. There is an added difficulty for non-English speakers in that the commands were originally developed by English speakers. Most users find Graphical User Interfaces (GUI's) very intuitive. On the other hand, CLI's give much more control and require much less development.https://www.google.com/search?q=http%3A%2F%2Fpad.carpentries.org%2FdataTrieste19&ie=utf-8&oe=utf-8&aq=t&rls=com.ubuntu:en-US:official&gws_rd=ss

In the future it is likely that you will be teaching CLI to colleagues and students. Today we learnt that one of the key elements of Responsible Conduct of Research is being a responsible mentor and colleague - this includes being aware of how cultural and linguistic differences can cause learning challenges for those we interact with. Please take 5 minutes to reflect on the following question: if you are going to be training non-English speakers who have only used GUI's in Bash and other shell languages what steps would you take to make sure that they did not experience any unnecessary learning challenges. Write down 3 ideas on post-its on ways you could make their learning most effective.

Response can be seen here: https://drive.google.com/file/d/14MYEd8zNcIpBi2FavD8-PefuN0bFdLCd/view?usp=sharing

At the end of the UNIX module please complete the feedback form
~~https://forms.gle/evgVXG7aVUpyL4BCf7~~ (remark by Frans Huigen: This link does not work for me (error message "dynamic link not found")) thank you! :)

here is the correct one:
https://forms.gle/GfQi8iurvpKeoQrR7

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WELCOME DAY 2

Version control with git - Tuesday 6 August 2019 AM
http://swcarpentry.github.io/git-novice/

Cheat sheet of Git
https://github.github.com/training-kit/downloads/github-git-cheat-sheet.pdf

Remember to put everything away (commited) and check the git status once your work is done (or the day).

At the end of the git module please complete the feedback form
https://forms.gle/GfQi8iurvpKeoQrR7

Ethics exercise
GitHub is blocked to researchers living in countries under sanction from the US. This means that they are not (legally) able to collaborate on this platform or to benefit from the vast resources it offers. Is this a reason for you not to use this tool?
Feedback here: https://drive.google.com/file/d/1yk6xtB-3ZZr7NbBgrLAuasU9oQyXr19W/view?usp=sharing

IMPORTANT!
For those who want to have their posters printed, please deposit the PDF in this folder:
https://tinyurl.com/y3o6bgn6
If you have any problem with depositing, ask Maria for help!

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R content

Clone URL: https://github.com/marioa/trieste.git
Repo in GitHub: https://github.com/marioa/trieste
Course Notes: http://swcarpentry.github.io/r-novice-gapminder/

* Mario Antonioletti (mario@epcc.ed.ac.uk), UK. I want to teach you folks R. I am a bad viola player.
Tshiamo Motshegwa, HPC and Datascience Research Cluster Coordinator, Department of Computer Science, University of Botswana.
Looking for Capacity Building engagements, Networks, Short Course Content around HPC, Datascience and tools etc for our Skills Development Progarmme.
I am a Chef -interested in culinary delights from around the world and experimenting with them in my kitchen. motshegwat@ub.ac.bw
* Charlene Gaba (gaba.charlene@gmail.com), Benin. I want to learn how to use R to develop a Graphical User Interface. I like learning new languages.
Kawtar EL Karfi , Morocco (elkarfi.k@gmail.com) , I want to learn R , I have no experience with R , i'm a Sushi lover
* Frans Huigen, the Netherlands; i want to learn R since I do not know how to use it. And I bloody love Euro Truck Simulator 2.
Odu nkiruka, Nigeria, I want to be an expert in R, odunkiruka@gmail.com
Hannah Nyarko, Ghana, I hope to enhance my skills in R
sara Ettamimi, Portugal. i wanna improuve my R knowledge

Viktoria Wichert, Germany, I'd like to learn how to analyze my data with R, but I have no experience with it. I do ballroom dancing :)
Ontiretse Ishmael ,Botswana - I want to analyse data with R.
*Cristiana Pisoni, Italy (cristiana.pisoni@unibg.it), I want to have a look to programming because I know very little. I love reading and cooking
Albert Doughan(doughan.albert@gmail.com), Ghana. I like adventure
*Eze Chijioke (ceze@aust.edu.ng), Germany. I want to learn R. I am a badminton player.
Sepideh Ghaziasgar- IRAN (sepide.ghaziasgar@gmail.com) I like to learn more about R and application in data science.
*Simisani, Botswana. I would like to find out more about R
Divya, Italy - want to revise and improve my skills in R
* Falana olorunjube fom Nigeria(fjjubel@gmail.com) I am conversant with C++, Java and I look forward to add R to my list of programming Languages
Sanjin Muftic, Bosnia/South Africa, I want to clean up data with R. I love to vacum.
*Jessica Hrudey, Canada/The Netherlands; I want to build on my existing R skills. I am a huge nerd.
Fatemeh Behdadkia, Iran, I like to know about R . and I want to know why I should use it rather than python
* Mouneem ESSABBAR, Morocco. Always looking to learn something new =)
Dhia Dean , Tunisia i never used R,and i m motivated to master it .
Ana Slavec (ana.slavec@innorenew.eu), Slovenia. I've used R in the past and want to refresh and improve my knowledge. I speak Italian, too.
Reena Sayani, India, I want to use R because it has in built libraries which are helpful in object oriented programming (rjsayani1@sheffield.ac.uk)
* Ikram El Karfi, Morocco,I have basic knowledge in R so I want to pass to the next level, I love chocolate and cheese :)
* Sothearath Seang, France. I'd love to learn more about R. I am bad in too many things I can't remember.
* Mariana Cubero, I am from Costa Rica. I want to learn more about R and to teach it to my collegues. I really like cats, I have 4.
Iris Uy, Philippines. I'd like to use R more.
Sina, iran. I want to know why do I need R when I have Python.
Princess, Ghana. I have never used R. I would be happy if I get the basics. Im a lactating Mum!
Nivi, Germany, I wanna learn to code more efficiently with R. Like absolutely not using for-loops and iterating over lists (nivedita@gfz-potsdam.de)
Sara Rhazlane (sara.rhazlane@gmail.com), Morocco.
Jamshid (jamshid.ardalankia@gmail.com)-change my life cycle by R
Ichrak Benamri (ichrakbenamri@gmail.com), Morocco.
*Ghadeer Mobasher (ghadeer.mobasher@bue.edu.eg), Egypt. I am a beginner user for R and would be grateful to learn R.
Kaoutar Elkhattabi(kaoutar.el.khattabi@gmail.com), Morocco, I use R in data mining but I want to learn the basis and improve my skills. I love exploring different cultures .
Amira Ghied (amira.ghied@gmail.com) Algeria

TYPE IN R in SHELL:
q() #to exit R
# once you are in the terminal (shell), you can type:
sudo apt remove rstudio
# press y to accept the removal and wait for a bit
sudo apt update
sudo apt install rstudio

```
gapminder <- read.csv("../data/gapminder-FiveYearData.csv"
                      stringsAsFactors=FALSE)
```

Filter data to only contain African countries (you could change to another continent):

```
ggplot(data = gapminder[gapminder$continent=="Africa",], aes(x=year, y=lifeExp, by=country)) +
  geom_line(aes(colour=country)) +
  geom_point()

  ggplot(data = gapminder, aes(x = gdpPercap, fill=continent)) +
      geom_density(alpha=0.5) + scale_x_log10()

  gapminder %>% select(country,lifeExp)          %>%
            group_by(country)               %>%
            summarise(meanLife=mean(lifeExp)) %>%
            arrange(desc(meanLife))
```

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○  WELCOME DAY 3  ○
└──────•❅•°•❊•°•❅•──────┘
```

To install all the missing packages in Rstudio you need to identify all the missing packages by reading the errors
Generally, it will ask you to install missing packages
In RSTUDIO:

```
   install.packages("tidyverse")
```

If you read the error message you will see something like "------- ANTICONF ERROR ----------
with the packages that are missing
In your TERMINAL, write

```
  sudo apt-get install <name of the indicated package>

  example: sudo apt-get install libssl-dev
```

Then in RSTUDIO try to reinstall the package you were trying to install

* you can also try: install.packages("package", dependencies = TRUE) this will automatically install the dependencies

Some working Examples of Using R are given in the link below
Pizza Place Geography : https://flowingdata.com/2013/10/14/pizza-place-geography/
Why People Move : https://flowingdata.com/2019/08/01/why-people-move/
A Day in the Life of Americans :https://flowingdata.com/2015/12/15/a-day-in-the-life-of-americans/
Shiny Dashboards using R: https://gallery.shinyapps.io/086-bus-dashboard/ (Gail's note: Shiny is an advanced application of Rmarkdown. We will be learning RMarkdown basics on Thursday during Author Carpentry!) :-)

Bookdown: write up your notes using R. https://bookdown.org/home/ (Gail's note: Bookdown is an advanced application of Rmarkdown. We will be learning RMarkdown basics on Thursday during Author Carpentry!) :-)

More Resources:

- R community slides tinyurl.com/Rcommunityslides
- ROpenScience community https://ropensci.org/Step
- Shiny tutorial https://bioinformatics-core-shared-training.github.io/shiny-bioinformatics/tutorial
- Connecting Git with Rstudio from zero http://happygitwithr.com/
- 10 minutes markdown tutorial https://commonmark.org/help/tutorial/
- If you want to learn github-flavored markdown in 3 minutes: https://guides.github.com/features/mastering-markdown/
- R script sections: https://support.rstudio.com/hc/en-us/articles/200484568-Code-Folding-and-Sections
- R Studio shortcuts Alt+Shift+K
- names colours http://www.stat.columbia.edu/%7Etzheng/files/Rcolor.pdf
- ggplot2 different color palettes (see http://www.cookbook-r.com/Graphs/Colors_(ggplot2)/
- http://www.stat.columbia.edu/%7Etzheng/files/Rcolor.pdf
- R cheat sheets! https://www.rstudio.com/resources/cheatsheets/
- https://www.rforcats.net/
- https://bookdown.org/ndphillips/YaRrr/
- https://r4ds.had.co.nz/
- https://rseek.org/

Are you interested in joining the R community? There are User Groups in different cities around the world that you can join, including Rladies groups. More info:

https://rladies.org/
https://jumpingrivers.github.io/meetingsR/r-user-groups.html

If your city doesn't have a chapter, you can also apply to create your own!

At the end of the R module please complete the feedback form
https://forms.gle/GfQi8iurvpKeoQrR7

Here's one solution for re-ordering the animals: > animals <- ordered(animals, levels = c("rabbit", "dog", "cow", "cat"))

- ↪ another way: factor(animals, levels = rev(levels(animals))
- another way: factor(animals, levels = sort(levels(animals), decreasing = TRUE))

Cheat sheet for R basic commands :
https://www.um.edu.mt/__data/assets/pdf_file/0003/288813/UnderstandingRcode2.pdf
Another example for the %in% operator: http://www.datasciencemadesimple.com/in-operator-in-r/

This is a good cheatsheet for ggplot2 https://github.com/rstudio/cheatsheets/blob/master/data-visualization-2.1.pdf
And this is info specifically covering ggplot2 in detail https://ggplot2.tidyverse.org/

Example R script to play with can be found at
https://github.com/hughshanahan/massAnalysis

Walk through of Rstudio
http://swcarpentry.github.io/r-novice-gapminder/

R ethics exercise
R is an example of Free and Open Source Software. It is a community-originated product, and users do not have access to technical support in the same way they would have as license holders of proprietary software. Users thus rely on community forums and peer support for assistance when they run into problems. These community forums rely entirely on the time of volunteer users.
As a future R user, how important do you think it is to dedicate time to helping other users on community forums?
feedback: https://drive.google.com/file/d/1pQSojd7UobIN3iCQrFjYBlYcpooYN7mw/view?usp=sharing

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Research Data Management (RDM)
Slides for RDM/OS/FAIR presentation: https://drive.google.com/open?id=1Nrc-F8igaWSIO56p9_h_SWO9IpsMDaUc
Slides for DMP presentation: https://drive.google.com/open?id=1tcnKTjlqsBbPPr93ZneFWrOvTbzPRyHa

https://www.ands-nectar-rds.org.au/fair-tool

FAIR principles and software: does is apply?
https://indico.cern.ch/event/588219/contributions/2384979/attachments/1426152/2189855/FAIR_Software_Principles_CERN_March_2017.pdf

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Today's Author Carpentry preparation (Thursday afternoon)

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Set up Instructions

Step 2. Log into your GitHub account and click on the tab for 'Repositories'

Step 3. Create a new repository in your GitHub Account by clicking on the green 'new' button

Step 4. On the 'Create a new repository' page near the top of the page, click on the link for 'Import a repository' -- import is used because you are coping from another GitHub repo to your own (cloud to

cloud)

Step 5. In the box 'Your old repository's clone URL', type in `https://github.com/AuthorCarpentry/markdown-pandoc-Student` (without copying the quotation marks

Step 6. Under the line 'Your new repository details', you will see your account name for the 'Owner' followed by a slash \. After the slash fill in the name "markdown-pandoc-student" but replace 'student' with your Firstname or Nickname or somename you have always wanted!
For example, Gail's new repository is called 'markdown-pandoc-Gail'

Step 7. Under Privacy, make sure 'Public' is selected.

Step 8. Click the green 'Begin import' button. This will start the process of copying the student files into your own repository in your GitHub account.

Step 9. When GitHub confirms your new repository is created, click on the link for the new repository. Do not make any changes to this repository! Do not create a README file.

Step 10. Confirm you see a GitHub page with these folders and files required for our session:
data (folder)
help (folder)
img (folder)
DMP0.txt (file)
references.bib (file)

11. Now you are all set to copy the lesson repository to your desktop using `git clone` at the command line:
Click on the green 'Clone' button on your repository and copy the link for the cloning step.
The command should look like this but with your name instead of student $ git clone https://github.com/AuthorCarpentry/markdown-pandoc-student.git

12. Once the clone is done, you may check that the files from Step 10 are in your local directory. Please do not change or disturb these files: they are set up as needed for our session.

Follow along with the lesson at https://authorcarpentry.github.io/markdown-pandoc/lesson-summary.html
END SET UP; Please put up your Green Sticky!

To publish your final report to the Web you will upload to your github account on the gh-pages branch.

DONE thx to Dr Clement! Step 1. Please install the pandoc application onto your desktop using the following unix shell command in your terminal:
$ sudo apt install pandoc

$ cd markdown-pandoc-shaily

```
$ pandoc DMP0.txt -s -o DMP0.md
$ pandoc DMP0.md -s -o DMP0.html
$ cat DMP0.html
$ git add *
$ git commit -m "Uploading multiple files"
$ git push
```

Additional Resources for Open Authoring in RStudio

- RMarkdown, the Definitive Guide (OA version): https://bookdown.org/yihui/rmarkdown/
- Pandoc User's Manual., https://pandoc.org/MANUAL.html
- Dynamic Documents with R and Knitr: https://github.com/yihui/knitr-book
- rticles package (contains templates for many journal styles): https://cran.r-project.org/web/packages/rticles/index.html
- Happy with Git : https://happygitwithr.com/ (sections 10 and 11 explain how to get a GitHub key to store your credentials)
- Synch GitHub and Zenodo: If you want to try synching your report repository to Zenodo to obtain a DOI, please follow the directions available online at: Making Your Code Citable Using GitHub and Zenodo: A how to guide: https://genr.eu/wp/cite/
- HTML code to center the map: <img src="img/rio-grande-basin.png" align="middle">Map of the Area</>
- Database for Citation Style documents (from Zotero): https://www.zotero.org/styles
- YAML line to format citatino to a particular style: csl: ieee-transactions-on-signal-processing.csl
- Math and Markdown: https://www.calvin.edu/~rpruim/courses/s341/S17/from-class/MathinRmd.html

More Advanced Applications of RMarkdown (requires additional Rpackages)

- Shiny: Introduction to interactive documents: http://shiny.rstudio.com/articles/interactive-docs.html
- Blogdown, Creating Websites with RMarkdown: https://bookdown.org/yihui/blogdown/
- Bookdown, Authoring Books with RMarkdown: https://bookdown.org/yihui/bookdown/
- Pagedown, Paged documents with RMarkdown: https://github.com/rstudio/pagedown
- Xaringan, creating slideshows with remark.js through R Markdown: https://github.com/yihui/xaringan

Predatory Publishing (Andy Nobes) slides:
https://drive.google.com/file/d/1UkGp7gZ1Qjo8egfdAvALNJBc37N-f-YI/view?usp=sharing
Link to AuthorAid: https://www.authoraid.info/en/

thanks for sharing!, have been waiting for this!!!

Author Carpentry Copyright and Data Licensing Play

Resources about Authorship, Contribution, and Attribution (Giving Credit Where Due)

1. Committee on Publication Ethics, COPE: https://publicationethics.org/ | @C0PE
    - COPE Case on which our play was based: https://publicationethics.org/case/questions-authorship-duplicate-publication-and-copyright
2. International Committee of Medical Journal Editors (ICMJE) - Defining the Role of Authors and Contributors: http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html

3. Compact Between Biomedical Graduate Students and Their Research Advisors, https://www.aamc.org/initiatives/research/gradcompact/
4. Author Addendum, Intrfoduction: SPARC: https://sparcopen.org/our-work/author-rights/brochure-html/
    - Author Addendum Form: https://sparcopen.org/wp-content/uploads/2016/01/Access-Reuse_Addendum.pdf

5. Project CREDIT (Contributor Roles Taxonomy): https://www.casrai.org/credit.html
    - Publishing: Credit where credit is due: https://www.nature.com/news/publishing-credit-where-credit-is-due-1.15033
    - Journal of Experimental Biology use of CREDIT Taxonomy: https://jeb.biologists.org/content/author-contributions

6. AuthorAid, A global network of researchers. Discussion boards, webinars, mentoring, online courses: https://www.authoraid.info/en/
7. ThinkCheckSubmit checklist for selecting a reputable journal: https://thinkchecksubmit.org/
8. RetractionWatch, Tracking retractions as a window into the scientific process: https://retractionwatch.com/
9. Post publication changes to a paper, Erratum, addendum and corrigendum: https://grammarist.com/usage/erratum-addendum-and-corrigendum/
10. CreativeCommons Licenses: https://creativecommons.org/licenses/
    - The Wikipedia entry for Creeative Commons includes an excellent chart comparing the licenses: https://en.wikipedia.org/wiki/Creative_Commons_license
    - The chart itself is an image: https://en.wikipedia.org/wiki/Creative_Commons_license#/media/File:Creative_commons_license_spectrum.svg

11.Sherpa/Romeo database of Publisher copyright policies & self-archiving
http://sherpa.ac.uk/romeo/index.php

Example IEEE Explore Consent Form
https://drive.google.com/drive/folders/1-auEHTORY_Bbufbl5YtEtCbeqAW47VZS
link to the COPE website, with one of the pieces of advice I mentioned about withdrawing your paper from a predatory journal https://publicationethics.org/case/withdrawal-accepted-manuscript-predatory-journal
So, for the drive i need permission, could you please set the accessibility to open? (Frans Huigen)
try now - yeah, perfect, worked!
I can access the drive but I cannot open the PDF document. (FH:) yeah this doesn't work for me either

Gail Clement: @repositorian

Open and Responsible Science Citizenship
Slides: https://drive.google.com/file/d/1M6hGKY9HRHkviwX7ZsruX5Rm16PlUNFP/view?usp=sharing
Challenges for Openness: https://drive.google.com/file/d/1szOQJHqWj2yUr6omxHVjglOR5tBJCoce/view?usp=sharing
Tools for Openness: https://drive.google.com/file/d/1DbJ3Tqwmohh0XngbSJy18J_KQ-xLKcTP/view?usp=sharing
If anyone would like to discuss any open and responsible research content more, please email me at louise.bezuidenhout@insis.ox.ac.uk :)

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| Part 2 RDM lab
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http://bit.ly/2YUOLeJ that's the bitly link from Steve Diggs

Long link https://drive.google.com/drive/folders/1cCVu9PpqoRDad9Wg0xV_9p5-zmPWYf5m

Short link to the PDF: bit.ly/2YUOLeJ

SLIDE TEMPLATE: http://bit.ly/2OMqTu3

Things to cover in your presentation:

- ●**Our Team**
  - ○Name 1 - Role (sys/tech, scientists, researcher-writer)
  - .
  - Name N
- ●**The name of the research paper that we reviewed**
  - ○Name of Paper, year, lead author, publisher
- ●**Persistent Identifier for the data**
  - ○PID
- ●**We found the data we were looking for here:**
  - ○Name of repository / data center and URL
- ●**The data was discoverable/accessible**
  - ○Were you able to read the data with ODV or other software?
  - ○Could not find the data (why?)
- ●**Overall FAIRness assessment**

- Are you analyzing hydrographic ship data and/or Argo data?
- Try installing this software (Linux only) --> http://bit.ly/2YBPC8W
- Can't find data at the CCHDO repo?

The CCHDO repository is, unfortunately, down for the remainder of the day. Luckily, we the good folks at US-DOE/LBL have a functioning snapshot that will work for us today.

Please use the following link:
https://cdiac.ess-dive.lbl.gov/ftp/oceans//CLIVAR/

WELCOME DAY 6 -7

Weekend Off

WELCOME DAY 8

Visualization

Visualization slides here:
https://docs.google.com/presentation/d/1rtlY9TTIuwhS8zBez9DDtvlmL0GADkvAjm3-rNLJvGk/edit?usp=sharing

ggplot cheat sheet: httpsF://www.rstudio.com/wp-content/uploads/2015/03/ggplot2-cheatsheet.pdf
color-blind friendly palette in ggplot: http://www.cookbook-r.com/Graphs/Colors_(ggplot2)/#a-colorblind-friendly-palette
dplyr cheat sheet: https://www.rstudio.com/resources/cheatsheets/#dplyr
Rstudio IDE cheat sheet: https://www.rstudio.com/resources/cheatsheets/#ide

Iris' visualization:
https://github.com/irisdianauy/viz_for_trieste/blob/master/README.md

Maria's example on interactive plot with Plotly: https://naples.naturalproducts.net (scoll down the page)

Link to Data Viz practical guide and R script:
R script:
https://drive.google.com/file/d/1Ztzw8mRoWRfxK74eTh4MDujpo6qySC8c/view?usp=sharing
Practical guide:
https://drive.google.com/file/d/1KH-xKvEhOT3IeNKsYd39PoK8CqXAId0J/view?usp=sharing
R script with answer:
https://drive.google.com/file/d/1Y7_9qRyxKsQLL2hMCGji46g6uOZQvXU2/view?usp=sharing

Challenge 1
#1. Remove the legend from this plot
gapbox <- ggplot(data=gapminder, aes(x=continent, y=lifeExp, fill=continent, guides(fill= FALSE)))
gapbox +

```
  geom_boxplot(outlier.size=2, show.legend =FALSE)
#2. Also, make the plot horizontal
gapbox +
  geom_boxplot(outlier.size=2, show.legend =FALSE) + coord_flip()
#3. Instead of a boxplot, try geom_violin()
gapbox +
  geom_violin(scale = 'width', show.legend =FALSE)
```

Challenge 2

```
#1. As we did for lifeExp plot the distributions separately for each continent
gdpbox<- ggplot(data=gapminder, aes(x=continent, y=gdpPercap, fill=continent, guides(fill= FALSE)))
gdpbox +
  geom_boxplot(outlier.size=2, show.legend =FALSE)

#2.  plot GDP on a log scale
gdpbox<- ggplot(data=gapminder, aes(x=continent, y=log10(gdpPercap), fill=continent, guides(fill=
FALSE)))
gdpbox +
  geom_boxplot(outlier.size=2, show.legend =FALSE)
#3. Make boxplots of gdpPercap by continent
gdpbox +
  geom_boxplot(outlier.size=2, show.legend =FALSE) + coord_flip()
#4. Do the same, but plot GDP on a log scale
gdpbox<- ggplot(data=gapminder, aes(x=continent, y=log10(gdpPercap), fill=continent, guides(fill=
FALSE)))
gdpbox +
  geom_boxplot(outlier.size=2, show.legend =FALSE) + coord_flip()
```

Challenge 3

```
# Make a plot of lifeExp vs gdpPercap for China and India, with both lines and points.
indiachina <- subset(gapminder, country=="India" | country=="China")
indiachinaplot <- ggplot(indiachina, aes(y=lifeExp, x=gdpPercap))
indiachinaplot + geom_line() + geom_point(aes(color=country))
indiachinaplot+ aes(color=country) + geom_line() + geom_point() #making color global
```

If you want to change up the colour of the lines (or make the different countries have different line types) I found this link that was pretty useful
http://www.sthda.com/english/wiki/ggplot2-line-types-how-to-change-line-types-of-a-graph-in-r-software

```
#**********GOING FURTHER1**********

#Explorinf gdp versus life expectancy in 2007 with highlighting the larger countries
```

```
ggplot(gm_2007) +
  geom_point(aes(x = gdpPercap, y = lifeExp, color = continent, size = pop),# add scatter points
             alpha = 0.5) +
  geom_text(aes(x = gdpPercap, y = lifeExp + 3, label = country), # add some text annotations for the very large countries
            color = "grey50",
            data = filter(gm_2007, pop > 1000000000 | country %in% c("Nigeria", "United States"))) +
  scale_x_log10(limits = c(200, 60000)) + # clean the axes names and breaks
  labs(title = "GDP versus life expectancy in 2007", # change labels
       x = "GDP per capita (log scale)",
       y = "Life expectancy",
       size = "Popoulation",
       color = "Continent") +
  scale_size(range = c(0.1, 10), # change the size scale
             guide = "none") + # remove size legend
  theme_classic() +   # add a nicer theme
  theme(legend.position = "top",  # place legend at top and grey axis lines
        axis.line = element_line(color = "grey85"),
        axis.ticks = element_line(color = "grey85"))


#***********GOING FURTHER2*************
#exploring the relations

hip between life expectancy and GDP over time

install.packages('plotly')
library(plotly) # adds a frame aesthetic to ggplot, and allows interactive, linked views of a series of frames over time

g <- crosstalk::SharedData$new(gapminder, ~continent)
gg <- ggplot(g, aes(gdpPercap, lifeExp, color = continent, frame = year)) +
  geom_point(aes(size = pop, ids = country)) +
  geom_smooth(se = FALSE, method = "lm") +
  scale_x_log10()
ggplotly(gg) %>%
  highlight("plotly_hover")
```

Data visualization ethics exercise responses:
https://drive.google.com/file/d/1VuamOynkx_4w4f9DVxtnVPoZ7AjxJg7D/view?usp=sharing

[**Data Steward strand**]
Materials folder https://drive.google.com/drive/folders/1_MXFhrzKVuKjoytVf7wh5Pndp-BAWAA1
Marjan's slides about data steward roles and FAIR are in the Materials folder:
https://drive.google.com/open?id=1_hI5zDNiaAXkKVKUJkYIKHYOW5HbYV8Z

[**Data Steward strand**]
FAIR Data Assessment tools:
-FOSTER Assessing FAIR Data course https://www.fosteropenscience.eu/node/2644

-FAIRdat handout: https://drive.google.com/open?id=1x2F9ksx7Ue4IwOgZpbpSMtvJ1V69kpaz
-to read afterwards: "Results of an Analysis of Existing FAIR Assessment Tools", by the RDA Data Maturity Model Working Group:
https://www.rd-alliance.org/group/fair-data-maturity-model-wg/outcomes/results-analysis-existing-fair-assessment-tools

Link to papers for last Friday's student presentations:
https://drive.google.com/drive/folders/1cCVu9PpqoRDad9Wg0xV_9p5-zmPWYf5m?usp=sharing

Feedback form
https://docs.google.com/forms/d/10k5IXGuvgzQGEJVP6ENAlCx3WB3J07Jrd9xVTkZn2xA/edit

RDA webinar on DMPs, including Active DMP updates https://rd-alliance.org/rda-working-groups-solutions-dmp-recording-and-slides-webinar-now-available-0

DMPonline mailing list, also with information about the development roadmap:
https://www.jiscmail.ac.uk/cgi-bin/webadmin?A0=DMPONLINE-USER-GROUP (not really for end users)

DATA VIZ POLL: http://directpoll.com/v?XDVhEtNMXDjO1VQM7gGFmLuOf0WBuOykB

DMP

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- ❍ WELCOME DAY 9 ❍
- └──────•❋•°•⁕•°•❋•──────┘

[data steward strand]
Day 2 = August 13: DMP exercise https://drive.google.com/drive/folders/16fKpDXg-IjNZ0Tjzn5FgD8i6ZQL1COzo
H2020 DMP Rubric https://drive.google.com/drive/folders/16fKpDXg-IjNZ0Tjzn5FgD8i6ZQL1COzo
LIBER catalogue of reviewed DMPs: https://zenodo.org/communities/liber-dmp-cat/?page=1&size=20
"reviewed" = assessed according to the rubric. Please note: each template needs its own rubric [Marjan]
Aggregation of metadata standards: https://rdamsc.dcc.ac.uk/ In addition to http://www.dcc.ac.uk/resources/metadata-standards/ the first one also points to metadata-related tools for creating or validating metadata [Marjan]
Potentially relevant RDA groups dealing with metadata: https://rd-alliance.org/groups/research-metadata-schemas-wg and https://rd-alliance.org/groups/metadata-ig.html
"Enabling FAIR data" FAQ: https://copdess.org/enabling-fair-data-project/enabling-fair-data-faqs/
(also see the commitment statement: http://www.copdess.org/enabling-fair-data-project/commitment-to-enabling-fair-data-in-the-earth-space-and-environmental-sciences/)

A FAIRy tale; once upon a time... https://doi.org/10.5281/zenodo.2248200

CoreTrustSeal adoption stories (produced by RDA) https://rd-alliance.org/rda-coretrustseal-adoption-story-across-domains-and-regions
(experience of 5 organisations that have gone through the certification process)

Materials folder https://drive.google.com/drive/folders/1_MXFhrzKVuKjoytVf7wh5Pndp-BAWAA1
Marjan's slides about data steward roles, FAIR, licences, curation in the DANS archive, and are in the Materials folder:
https://drive.google.com/open?id=1CEahihgJwr8RybbX3WR8MrWSJorl1B4X

https://openworking.wordpress.com/2017/06/28/2017-self-assessment-of-research-data-services-and-4tu-centre-for-research-data-services-with-rise/

Engaging researchers with research data: The cookbook (draft open for consultation/comment)
https://docs.google.com/document/d/1XnXJeOocmaz-xU0oTmMLpBXrcFTdHmBDQG8bHMq7_GY/edit

http://www.digitalservices.lib.uct.ac.za/
http://www.eresearch.uct.ac.za/
http://www.digitalservices.lib.uct.ac.za/dls/rdm-policy

Another candidate tool for creating DMPs, with a demo you can try, promoted as "*This is data stewardship done seriously for the project success, not just to make your funder happy!"* I find it a bit much, but indeed this tool asks very good questions. The extensive guidance provided in the tool - rather cleverly - links to a book written by Barend Mons, one of the 'parents' of the FAIR acronym. https://ds-wizard.org/ , scroll down or the demo [Marjan]

[for Cristiana] https://www.rd-alliance.org/groups/rda-italy -> if you'd like an introduction just let me know [Daniel]

Feedback form
https://docs.google.com/forms/d/10k5IXGuvgzQGEJVP6ENAlCx3WB3J07Jrd9xVTkZn2xA/edit

Furqon & Sina's code for creating the user profile (multiplication and transpoing)

```
mat1 <- as.matrix(movgen_matrix3)
mat2 <- as.matrix(binary_ratings2)
View(result)
result <- t(mat2) %*% mat1
result <- t(result)
result[result < 0 ] <- 0
result[result > 0 ] <- 1
View(result)
```

[ECR Track]

Machine Learning Overview - Recommendation
Fundamentals of Machine Learning : https://drive.google.com/file/d/1vxgWe6HGW8zZ7dK-fwJURUw-oyHc8dUF/view?usp=sharing
Recommender Systems: https://drive.google.com/file/d/1tdt4brnkRkMkjykBQP4YuG68EwrQJrLb/view?usp=sharing

Recommender Systems
https://drive.google.com/file/d/1W5feh69F-fsC5Yz_5ranzLyUVTJv45nK/view?usp=sharing

Converting Numeric Data to factors : http://www.sthda.com/english/wiki/ggplot2-colors-how-to-change-colors-automatically-and-manually

Furqon & Sina's code for creating the user profile (multiplication and transpoing)

```

mat1 <- as.matrix(movgen_matrix3)
mat2 <- as.matrix(binary_ratings2)
View(result)
result <- t(mat2) %*% mat1
result <- t(result)
result[result < 0 ] <- 0
result[result > 0 ] <- 1
View(result)
```

Where did the code that Ekpe added go? (Jessica)

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❍ WELCOME DAY 10 ❍
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Machine learning and neural networks

[ECR Track]
Artificial Neural Networks
https://drive.google.com/file/d/1qzCzLAdwO5wRhDur8FJt5vJU0SBmhSNI/view?usp=sharing

Artificial Neural Networks Practicals:

Sample 1: https://drive.google.com/file/d/1cCh8buIdaHsvOdI-l2bKzURZ81U3j3B3/view?usp=sharing
Sample 2: https://drive.google.com/file/d/1TuBgGOWRj1kgYPolMk4VXbRDzRHCTIVG/view?usp=sharing
Sample 3: https://drive.google.com/file/d/1ZbdnW4mgNhoPE4ME9sh5O2g7IdGCA0BZ/view?usp=sharing

"hey i think that this link can help to assimilate the neuralnet package , https://www.datacamp.com/community/tutorials/neural-network-models-r"
https://rviews.rstudio.com/2a019/03/01/some-r-packages-for-roc-curves/

Recommender systems ethics feedback:
https://drive.google.com/file/d/1hOwcGzgMgfjVdUGF41IZbRZe0HxuZps2/view?usp=sharing

Please upload your presentations to:
https://drive.google.com/drive/folders/1-ePjf1ENKZ0X_Tc8QYE3SKblntdiKbhQ?usp=sharing

[ECR Track]
Artificial Neural Networks --> other ML methods?
https://drive.google.com/file/d/1E9VVIqzLlvExikVlh0f_aAuovjvJQWue/view?usp=sharing

[**Data steward strand**]
University of Bath RDM policy https://www.bath.ac.uk/corporate-information/research-data-policy/

University College London
https://www.ucl.ac.uk/library/research-support/research-data-management/policies-funders-expectations

University of Leiden Research Data Management Regulations:
https://www.bibliotheek.universiteitleiden.nl/binaries/content/assets/ul2ub/research--publish/research-data-management-regulations-leiden-university_def.pdf

List of topics that should/could be addressed in an institutional data policy: pp 21-22 in
https://pure.knaw.nl/portal/files/5752346/Whitepaper_ResearchdatamanagementAnoverview_DEF.pdf
[apologies for self-promotion... - Marjan]

RDM costing tool: https://www.uu.nl/en/research/research-data-management/guides/costs-of-data-management This builds on the tool developed by the UK Data Service by e.g. indicating salary costs [Marjan]

New JISC guide on 'What to keep':
https://repository.jisc.ac.uk/7262/1/JR0100_WHAT_RESEARCH_DATA_TO_KEEP_FEB2019_v5_WEB.pdf Interesting approach: different levels of curation for Re-use and for Research integrity. Contains also use cases. [Marjan]

Paper about the new Google Dataset Search: https://storage.googleapis.com/pub-tools-public-publication-data/pdf/77547c8d2a7fba472e76c774028cf2b3c0afdb8a.pdf
https://toolbox.google.com/datasetsearch

B2SHARE exercise: https://drive.google.com/open?id=1xLaJanl8A75kJ_8Xiq3r5oDPbfNz9h7W

Tweeted by Mark Parsons: https://datascience.codata.org/articles/10.5334/dsj-2019-038/ Practice paper: Teaching RDM to students - just published

Data Journals:
https://brill.com/view/journals/rdj/rdj-overview.xml?lang=en

https://openhealthdata.metajnl.com
https://bdj.pensoft.net

Joy's suggestion:
https://riojournal.com/ - Research Ideas and Outcomes (RIO) Journal - possible to publish data management plans
https://riojournal.com/article/14672 - A Data Management Plan that has been published in RIO. You can see suggested citation and metrics in right hand column.

Ubiquity Press journals (includes several more data journals - in archaelogy, humanities, psychology etc.)
https://www.ubiquitypress.com/site/journals/

Link to the draft recommendations by EOSC-hub, OpenAIRE, FREYA, RDA Europe, FAIRsFAIR
https://tinyurl.com/yxmub54h
(includes links to workshop presentations and case studies)

Question about whether to use material that has no clear license. Example of CODATA/RDA school photo on website that doesn't have a license. The FAIRy Tale we looked at yesterday suggested that they we don't use anything without a clear license but in reality, it is often a judgement call based on a risk assessment you will carry out. In the case of the CODATA/RDA school photo, we know that likely no one would object to the image being reused so the risk is low.

Request for examples of reusable training. Some good sources are:
FOSTER toolkit has 12 courses aimed at early career researchers. The courses each take 1-2 hours and include practical tips on getting started with Open Science topics as well as providing information on discipline specific tools and resources that can be used. There is no specified order through the courses – researchers just explore topics that they want to learn more about at their own pace. Badges are awarded upon successful completion (except for UDIT and FAIR assessment courses which were added after the life of the project) https://www.fosteropenscience.eu/toolkit

CESSDA RDM Training
This online course is broken into seven chapters and is targeted toward social science researchers. Researchers should work through the content in an ordered way.
https://www.cessda.eu/Training/Training-Resources/Library/Data-Management-Expert-Guide

Relivering Research Data Management Services MOOC http://www.dcc.ac.uk/news/new-mooc-delivering-research-data-management-services

Shibboleth sign on - information can be seen on this https://www.shibboleth.net/
Geant https://www.geant.org/ provides both Eduroam and Edugain. The European eduroam service is a large-scale collaboration between hundreds of institutions. Edugain https://edugain.org/: the eduGAIN interfederation service connects identity federations around the world, simplifying access to content, services and resources for the global research and education community. eduGAIN comprises over 60 participant federations connecting more than 5,000 Identity and Service Providers. Here are the member federations (i.e. countries): https://edugain.org/participants/federations-in-edugain/

FOSTER Train the Trainer Game: https://www.fosteropenscience.eu/content/train-trainer-card-game-open-science-training

Action plans: https://docs.google.com/document/d/1hGh-PZVjRSasd8htoFEa9C7ggATrQI1Nb9x1DwoLzfs/edit

Indigenous cultural and intellectual property rights
RDA group https://www.rd-alliance.org/groups/international-indigenous-data-sovereignty-ig
Working on principles of Indigenous data governance
CARE: Collective benefit, Authority to control, Responsibility, Ethics

https://researchdata.ands.org.au/ access options: open, conditional, restricted

Thanks to Ivo Grigorov (Technical University of Denmark, FOSTER project) for sharing the quotes below:
•**When you integrate Open Science in your European research proposal, this makes your proposal more competitive.**
-Grigorov, Ivo; Elbæk, Mikael; Rettberg, Najla; Davidson, Joy: "Winning Horizon 2020 with Open Science". https://doi.org/10.5281/zenodo.12247
•**There is evidence that grant proposals are receiving praise for including a DMP outline – even though in H2020 a DMP is not required at the proposal stage, and not a competitive point. Quotes from EC evaluation reviews of grant proposals:**
-*"a clear description is provided of how core data sets and model development can be shared broadly within the scientific community"*
-*"data storage and accessibility issues are not considered sufficiently"*
-*"there is very good realization of the commercial potential of the project outcomes, which is reflected in the establishment of a data management plan, including IP related issues."*
So: you better **start early** on a concrete and convincing DMP ;-)

Feedback:
+ personal and informal, can say what I know and not know
- more exercises; would make me more awake
+ interactive, group work (kept me awake, better than coffee)
- unclarity sometimes why we're doing this; where are we in the workflow? better connections. We missen the croissants on the first day
+ exercises, we confronted different realities, also input from the other students; informal
- part of the theory could be done ahead, pre-course work; then ask in the morning 'have you read it, any questions?'
+ exercises, discussion, interactivity
- time-intensive, a lot of sitting; would like to study theory before (homework); maybe group work for longer periods, with coffee. [we didn't suggest to break out]
- more connection between week 1 and week 2: e.g. how can data stewards use R? More case stories and personal journeys from the tutors. Structure along the lifecycle
+ equal number of students-trainers; decent balance between theory and practice; chance to ask questions
+ the way how the tutors opened up, steep learning curve; comfortable to be honest about own knowledge; good exchange between "juniors" and "seniors"
- more physical action; stretching ;-) like Hugh did
+ very diverse group, different roles and disciplines. We probably learned more than we'd have in more homogeneous group.
= 10 participants would be a good number; not more.

Feedback form
https://docs.google.com/forms/d/10k5IXGuvgzQGEJVP6ENAlCx3WB3J07Jrd9xVTkZn2xA/edit

(Frans Huigen): Reposting the link to feedback form for all of the courses:
https://forms.gle/GfQi8iurvpKeoQrR7

Research Computational Infrastructure :
https://github.com/opensciencegrid/dosar/blob/master/docs/DataTrieste2019/Materials.md

This is the Open Science by Design report that Rob mentioned in his presentation (you can download the PDF for free): https://www.nap.edu/read/25116/chapter/1

[Data Steward Track]

Question: data stewards career path... what are they? what has been your experience?

Linked data session exercises: http://bit.ly/LDexercises

Feedback
Vocabs and ontologies
W3C (background info)
Others uses of ontologies (besides LD)
Q re. tracking projects and data use

Digital Humanities at Oxford Summer School
https://www.dhoxss.net/

Feedback form for **data stewards**:
https://docs.google.com/forms/d/10k5IXGuvgzQGEJVP6ENAlCx3WB3J07Jrd9xVTkZn2xA/edit
Action plans for data stewards: https://docs.google.com/document/d/1hGh-PZVjRSasd8htoFEa9C7ggATrQI1Nb9x1DwoLzfs/edit

[ECR Track]
Research Computational Infrastructure:
https://github.com/opensciencegrid/dosar/blob/master/docs/DataTrieste2019/CODATA-2019_Research-Computational-Infrastructures_Cloud-Infrastructures.pdf

Link to the Cloud Computing Use Cases Document

http://www.cloud-council.org/Cloud_Computing_Use_Cases_Whitepaper-4_0.pdf

❍ DATA TRIESTE ALUMNI FORM ❍

Please fill this out at your convenience, it will be used for follow up communication about school opportunities.
https://docs.google.com/forms/d/e/1FAIpQLSceNtHG3SC73S-sEWktxs8u6OCC7JWib820My5O-rggnL7CGg/viewform?usp=sf_link

Yeah, same here (sorry, I put back the original content - Frans)
Rob, just to check: i am obliged to fill a number in my "country of origin" part, could you change that?
Other than that, it works perfectly fine (Frans Huigen)
I've fixed the issues with the Origin Country looking for a number.
I also have a problem with the coutry origin..14:34
All works fine for me now (Frans Huigen, 14:38) and i have sent the form! :)
I answered this before the correction, and I put in my country code. I hope that's okay. --Iris Uy

---

UPCPOMING ONFERENCES

VIZAFRICA 2019
https://vizafrica.codata.org/

HELINA 2019
https://www.helina-online.org/call-for-papers-2019/

HELSINKI 2019, october (RDA Plenary 14)
https://www.rd-alliance.org/plenaries/rdas-14th-plenary-helsinki-finland

PORTO 2019, september (Open Science Fair)
https://www.eosc-portal.eu/events/open-science-fair-2019\

Sharing is Caring (AMSTERDAM 2019, november)
http://sharecare.nu/category/amsterdam-x-2019/

AMSTERDAM 2019, september (iPRES on digital preservation)
https://ipres2019.org

ROME 2019, september (ISSI)
https://www.issi2019.org

DUBLIN 2019 (International Digital Curation Conference)
http://www.dcc.ac.uk/events/idcc20

PARIS, 2020 (BOBCATSSS on library and information science)
http://www.bobcatsss.info/2020/index.php

RECENT PAST CONFERENCES

SCIDATACon-IDW2018
https://www.scidatacon.org/IDW2018/
AT IDW 2018
https://www.internationaldataweek.org/
Preconference events @ IDW https://www.dirisa.ac.za/dirisa-attendance-at-the-international-data-week-2018-held-in-botswana/

IST AFRICA 2018 (Botswana)
http://www.ist-africa.org/Conference2018/

IST AFRICA 2019 (Kenya)
http://www.ist-africa.org/Conference2019/

DIRISA National Data Workshop (South Africa)
https://www.dirisa.ac.za/
https://www.dirisa.ac.za/national-data-workshop-2019/

https://www.dirisa.ac.za/dirisa-attendance-at-the-international-data-week-2018-held-in-botswana/

African Open Science & Open Data Initiative
http://africanopenscience.org.za/
https://twitter.com/cedanews/status/996378120348471296
http://www.ceda.ac.uk/contact/pv2018/pv2018programme/
See our paper here
PV2018 Proceedings here https://indico.cern.ch/event/666320/attachments/1641822/2645929/PV2018-RAL-CONF-2018-001.pdf

SADC Cyberinfrastrure Framework
https://www.slideshare.net/AfricanOpenSciencePl/developments-in-connected-regional-sadc-cyberinfrastructure-to-support-data-sharing-open-sciencetshiamo-motshegwa-81412672
https://ieeexplore.ieee.org/document/8417349
test <--- test worked
Botswana Open Data Open Science
http://www.codata.org/news/220/62/Presentations-from-the-Botswana-National-Forum-on-Open-Data-Open-Science-30-31-October-2017

Nice Data Visualization (Obama's 2013 US Budget / NY Times) -->
https://archive.nytimes.com/www.nytimes.com/interactive/2012/02/13/us/politics/2013-budget-proposal-

graphic.html?hp

the encryption challenge link:
https://docs.google.com/presentation/d/1WpcmWfumcSZuaMpBieepi_ierwoaGoolpNIGmvyF9Fk/edit#slide=id.g3ec16def03_0_0

second encryption assignment on my github (Sina):
https://github.com/sepante-sub/decryption

- ↪ Another encryption assignement method (Mouneem):
  - https://github.com/mouneem/Monoalphabetic-hashing
  - solution: mr. and mrs. dursley, of number four, privet drive, were proud to say that they were perfectly normal, thank you very much. they were the last people you'd expect to be involved in anything strange or mysterious, because they just didn't hold with such nonsense.

[Tracking the impact of the CODATA/RDA data science schools: the case of the OSG] - Oscar Arbelaez Echeverry from Colombia - His story on using OpenScience grid for his Monte Carlo simulations
https://codata.org/blog/2019/04/03/tracking-the-impact-of-the-codata-rda-data-science-schools-the-case-of-the-osg/

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https://climateknowledgeportal.worldbank.org/download-data

https://notebooks.cloud.cnaf.infn.it:8888/