Version Control with Git (A time travel machine)

* Basic Git commands.

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| Create a git repository | **git init** |
| Add a file to snapshot | **git add <file\_name>** |
| Add all files to snapshot | **git add .** |
| Checking the status of snapshot | **git status** |
| Saving snapshot (commit) | **git commit -m "message"** |
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| Checking history of commits | **git log --oneline** |
| Detailed history of commits | **git whatchanged** |
| Checking out previously saved snapshots | **git checkout <commit\_id>** |
| Going back to current state | **git checkout master** |

* Demo: Git version control in R.

1. Loading built-in dataset in R and saving it as “mydata.RData” file under “dvc” folder.

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| **data("USArrests")**  **# The USArrests dataset contains statistics on violent crime rates per 100,000 residents for each of the 50 US states in 1973.**  **# Murder - Murder arrests per 100,000**  **# Assault - Assault arrests per 100,000**  **# UrbanPop - Percent urban population**  **# Rape - Rape arrests per 100,000**  **save.image(file.choose()) #save file as mydata.RData under “dvc” folder**  **load(file.choose())** |

1. Create git repository under “dvc” folder. Add file to snapshot. Save the snapshot with message “initial commit”

**> git init**

**> git add mydata.RData**

**> git commit -m “initial commit”**

1. Manipulating data and saving it. Then, adding this modified data file to snapshot and saving the snapshot with a message.

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| **USArrests <- subset(USArrests, Murder > 10) #keeping observations having Murder value greater than 10**  **save.image(file.choose())** |

**> git add mydata.RData**

**> git commit -m “filtered dataset”**

1. Exporting scatter plots and creating a report with a new commit message.

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| **jpeg('plot.jpg')**  **plot(USArrests)**  **dev.off()** |

* Create a file “report.docx” and import the plot.
* Add the new files and commit.

**> git add plot.jpg report.docx**

**> git commit -m “creating a report with plot”**

1. Add description of the plot in “report.docx” file and commit.

**> git add report.docx**

**> git commit -m “revised report with description”**

Now check history of commits, its details, checkout previous versions, and coming back to current state.