Signal Processing Term-3, 2021

INTRODUCTORY TUTORIAL ON GITHUB AND MATLAB

Topics to be covered

- Git and GitHub
- 1) GitHub classrooms
- 2) MATLAB INSTALLATIONS
- 3) MATLAB BASICS
- 4) LAB-0

Prerequisite: GitHub account (Refer: How to create a github account)

Git and GitHub

GIT

- Version control system
- Git tracks the changes you make to files in your project
- You can revert to older versions, should you ever need to
- Git makes collaboration easier, allowing changes by multiple people to all be merged into one source

Git was created by Linus Torvalds in 2005 for development of the Linux kernel, with other kernel developers contributing to its initial development

GitHub

GitHub is often confused with Git.

GitHub is an online hosting service that integrates version control using Git.

You will be using this tool for your assignments, labs and projects.

For Windows and Mac users, to avoid using the command line, a GUI version of GitHub, *GitHub Desktop*, is available too.

GitHub was recently acquired by Microsoft.

Getting started

(Linux)

```
git clone <repository URL>
```

```
git add <file/directory name>
```

```
git commit –m "<commit message>"
```

```
git push origin <branch name>
```

```
git pull
```

```
git config --global user.name <github username>
```

```
git config --global user.email <github associated email>
```

Getting started

(Windows)

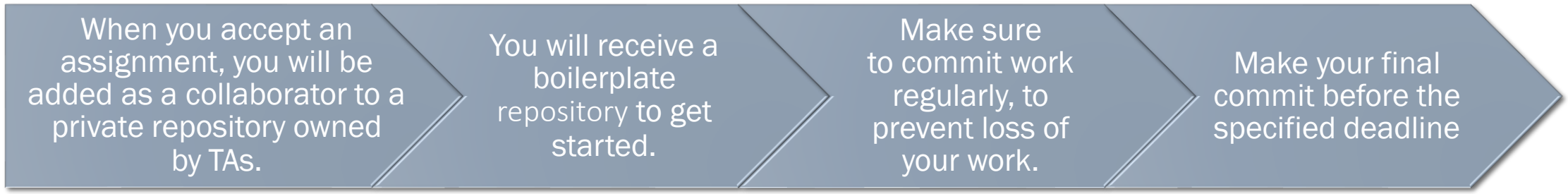
- Install the desktop version GitHub classroom
- GitHub online might be better options
- See the demo
- Create a folder by entering the folder name
- insert a ‘/’, it will create a folder
- Commit any temp file name and modify the folder
- Before final commit, delete the temp file

Getting started with GitHub classroom

Opening the assignment for the first time will prompt you to link your GitHub username with your identifier (roll number).

Accept the assignment to get access to the questions and boilerplate code.

How to use



We will have access to the state of the repository at the time of deadline. Any later commits will not be considered.

MATLAB

MATLAB

- **Command Window :**
- **Editor Window :**

1) Difference between functions.m and main_code.m

2) While naming the script, make sure it is different from the inbuilt functions within MATLAB library

3) Vectors and Matrix

Eg : a = [1 2 3..] A = [123;456;789]

4) Product (*) and elementwise multiplication (.*)

5) linspace(1, 101, 10) generates linearly equaled 10 points between 1 and 101 [1 , 11, 21…101]

6) 1:10 = natural numbers from 1 to 10 [1,2,3..10]

7) See the ‘plot’ , ‘stem’ and ‘disp’ function

8) sum(a,b)

Command window : sum(10,15)

9) [a,b] = min(a)

MATLAB

10) Loops : indexing starts from 1

```
Eg:   for i = 1:10
          a(i) = 1 + I;
      end
```

11) if, else, elseif

```
Eg :      if a > 5
            a = 5*a;
          elseif a > 15
            a = 15;
          else
            a = 0;
          end
```

12) sum(a,b)

command window : sum(10,15)

13) [a,b] = min(a)

14) rand function

MATLAB

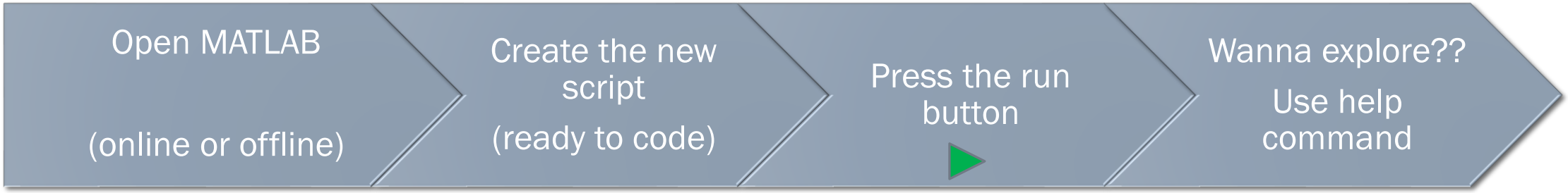
15) Writing functions :

```
function [a ,b] = min_max ( x, y)
    if ( x >= y )
    a = x;
    b = y;
    else
     a = y;
     b = x;
    end
end
```

16) Calling functions :

```
p = 10;
q  =  2;
[max,min] = min_max ( p, q ) ;
message_1 = ['Maximum is ' , num2str(max)]; disp(message_1);
message_2 = ['Minimum is ' , num2str(min)]; disp(message_2);
```

MATLAB



Have any doubt ?? ---> Reach out the TA's

Thank you!