HOMEWORK WEEK 4
(handout for students)

TASK 1 (Git and GitHub)

Question 1

Complete definitions for key Git & GitHub terminology

GIT WORKFLOW FUNDAMENTALS

- **Working Directory**

  A working directory is a single checkout of a version of the project. This essentially means if you checkout a branch(e.g. master) and are on a particular commit (e.g. HEAD), your working directory is the "umbrella" term for all your files and folders.

- **Staging Area**

  Files that are going to be a part of the next commit are placed in the staging area.The staging area tells git what changes will be made for the next commit, the repository contains all projects of a projects commits.

- **Local Repo (head)**

  The HEAD in git points to the current branch reference, which in turn refers to the most recent commit you made or the most recent commit that was checked into your working directory. Therefore, it will also be the parent of the next commit you do.

- **Remote repo (master)**

Remote repo master is command that says push the commits in the master to the remote named origin

WORKING DIRECTORY STATES:

- **Staged**

  In git, the staging step allows you to make changes to your working directory, and when you decide. It allows you to record changes in changes in small commits

- **Modified**

Files become modified when you edit them,because changes have been made since the last commit.As you work, you selectively stage these modified files, and then you commit all staged changes, and the cycle repeats.

- **Committed**

Commits are operations which send the latest changes to the repository making these changes part of the master revision.

GIT COMMANDS:

- **Git add**

Git add adds any changes to the working directory to the staging area

- **Git commit**

Git commit captures a snapshot of the projects currently staged changes. Committed snapshots can be thought of as a safe version of the project.

- **Git push**

Git push is used to upload local repository content to a remote repository

- **Git fetch**

The git fetch command is used to download contents from repository.

- **Git merge**

Git merge is gits way of bringing a forked history back together. It takes the independent lines of development created by git branches and integrates them into a single line

- **Git pull**

The git pull command is used to fetch and download content from a remote repository and update the local repository immediately

TASK 2 (Exception Handling)

Question 1

Simple ATM program

Using exception handling code blocks such as try/ except / else / finally, write a program that simulates an ATM machine to withdraw money.

(NB: the more code blocks the better, but try to use at least two key words e.g. try/except)

Tasks:

1. Prompt user for a pin code

2. If the pin code is correct then proceed to the next step, otherwise ask a user to type in a password again. You can give a user a maximum of 3 attempts and then exit a program.

3. Set account balance to 100.

4. Now we need to simulate cash withdrawal

5. Accept the withdrawal amount

6. Subtract the amount from the account balance and display the remaining balance (NOTE! The balance cannot be negative!)

7. However, when a user asks to 'withdraw' more money than they have on their account, then you need to raise an error an exit the program.

TASK 3 (Testing)

Question 1

Use the Simple ATM program to write unit tests for your functions.

You are allowed to re-factor your function to ‘untangle’ some logic into smaller blocks of code to make it easier to write tests.

Try to write at least 5 unit tests in total covering various cases.