Worksheet 7

General Instructions: Do not copy-paste from this file to terminal. If you have doubts, contact the instructors or TAs. And **do not panic**!

- The first two tasks in this worksheet require you to use Python3 shell. You need to copy paste your work (commands and outputs) to a file using gedit or nano.
- The last few problems in this worksheet will require you to write a program.
- You should keep all your files in `CS1101/ws07` folder.
- Use `gedit` or `nano` to type your programs.
- The name of the programs should be `prob-n.py` for n^{th} problem.
- Save the output of your program in a text file `prob-n-output.txt`.
- After you finish, create an archive of the folder `ws07` with name `ws07-idnumber.tgz` and upload in `WeLearn`.

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1. Write a program that takes an integer n as input and produce a file, named `fibonacci.txt` containing the first n numbers in a Fibonacci sequence.
2. Write a program that takes an integer n as input and produce a file, named `factorial.txt` containing the first n real numbers together with their factorial. For example, if n is given as 5, then the content of the file `factorial.txt` should be:

   ```
   1 1
   2 2
   3 6
   4 24
   5 120
   ```

3. (a) Write a program that takes 5 names from the user as input and writes the names in a file called: `names.txt`.
   (b) Extend the above program to only write the names containing at least one vowel in either capital or small case.
4. (a) Read the file `roll-marks.txt` containing the roll and marks of 50 students. Store the roll numbers and marks in two separate lists `roll` and `marks`. The program will return the highest marks written in a file: `high-marks.txt`. [Try to implement a function using your earlier code for determining the maximum of a list of numbers].
   (b) Write a program to give a grace marks of 5 to all the students who scored < 50. Your program should write the roll number and the new marks in another file called `new-marks.txt`.
   (c) Make another file called `failed.txt` containing only the roll numbers of the students who have failed (considering 50 as the pass marks) after the grace marks.
5. (a) Read **only** the marks stored in `roll-marks.txt` in a list `marks`.
   (b) Sort the list in descending order. [Try to use your earlier code for sorting an array].
   (c) Make another file, called `sorted-marks.txt` and write the sorted marks in that file.