# Operating Systems

## Assignment 3
## Part 1

- **Dewangee Agrawal (2016034)**
- **Suraj Prathik Kumar (2016101)**

## Description of your code and how you implemented the function -

We have used semaphores to implement the reader-writer problem. The semaphore wait and signal functions are used for the same and the value of mutex is incremented or decremented accordingly.
The code consists of two functions :
- Reader() -
    - The readers make sure that no writer is writing to the file.
    - Then, multiple readers can access the file and read the required data.
- Writer() -
    - The writer checks that no reader is reading the file or that no writer is writing to it.
    - The writer takes message to be written by it as input from the user.
    - Once it is free to write, it writes the message to the file.

## The inputs the user should give -

- The user is asked to input whether he wants to add a writer or reader. (integer n)
- When n=1, a writer is added.
    - The writer is now asked to input the message he wants to write as the writer.
    - When he inputs a single word message, it is written by a single writer.
    - When he inputs a multiple word message separated by spaces, each word is written by a different writer sequentially. Thus, no two writers can write at the same time.
- When n=2, a reader is added.

- The reader reads the messages written to the file.

## Expected output (and how to interpret it) -

- The output states the sequence in which reading and writing takes place.

## Error values and how to interpret them -

- File error
    - When the message is not written to read from the file.

- Input error
    - When the user inputs an incorrect choice.