

# CS618: Assignment 1

Total Marks: 100

Due on: 14th January, 2015, 04:00am

This assignment is to help appreciate the bottlenecks of disk accesses.

Create 1000 *binary* files on *hard disk*, each of size 2 KB by writing arbitrary bits to it. Name them **r000** to **r999**.

Next, similarly create 1000 *binary* files of size 64 KB on *hard disk*, and name them **s000** to **s999**.

Write a program that performs the following:

- (i) Reads the 1000 **r???** files randomly.
- (ii) Reads the 1000 **s???** files randomly.
- (iii) Overwrites randomly half the bits of the 1000 **r???** files (keeping the size as same).
- (iv) Overwrites randomly half the bits of the 1000 **s???** files (keeping the size as same).
- (v) Reads 1000 files from **r???** and **s???** at different ratios (10% to 90% in gaps of 10%).
- (vi) Overwrites randomly half the bits of 1000 files from **r???** and **s???** (keeping the size as same) at different ratios (10% to 90% in gaps of 10%).

For each of these parts, time the programs from starting of each file access to its end. Report the following parameters of the running times:

- (a) minimum,
- (b) maximum,
- (c) mean,
- (d) standard deviation.

What do you conclude?

Repeat the exercise by creating the **r???** and **s???** on *SSD drive*, i.e., on USB drive. (Remember that these are not pure SSD times since the USB bus will cause some delay. It is, therefore, preferable to use USB 3.0 ports.)

Again, what do you conclude?

Submit the program and the answers through the submission portal only. You must name your submission **studentno\_assgn1.zip**. The student numbers (which are *not* the roll numbers) are 2-digit codes and are available from the course website.