Indian Institute of Technology Jodhpur
Operating Systems Lab (CS330)
Assignment 6

Dated 15th April, 2021 **Total marks: 30**

1. Write a program in C/C++ language to implement FIFO, LRU and Optimal Page Replacement Algorithms (Consider that the degree of multiprogramming is 1). The Inputs and outputs are the following:

User Input
a) Number of frames allocated to the process
b) Reference string

Output:
No. of page faults for each replacement algorithm

Run the simulation n number times in a loop (use different values for input b in each loop) for a given choice and check if there is Belady's Anomaly by increasing the number of frames. Indicate the no of frames for which Belady's Anomaly is visible.

2. Write a program in C/C++ language to implement Banker's Algorithm. Your program will read the number of processes, number of resource type and the matrices (Available, Max, Allocation, Need). Your program will also take an input for a process request (Process no. and a request string depicting the number of instances required for each resource type). The program will first check whether the input state is safe or unsafe, and then, output whether the stated request can be fulfilled.

Submission Guidelines:

Make a Roll.zip file that contains memory.c (1st program) and bankers.c (2nd program) along with the Readme file. Mention your observation, explanation, assumptions, limitation or bugs (if any) in the Readme.file

Deadline: 24th April, 2021, 23:59 hrs

Evaluation:

- Correct implementation of the first program (no. of page fault for all three algorithms) (10pts)
- Correct implementation of the second program (input state is safe/unsafe) (10pts)
- Observation of Belady's anomaly (5pts)
- Deciding whether the process request can be granted or not by computing the safe/unsafe state (5pts)