BCSE – 3rd year – 1st Semester – 2023
Operating Systems Laboratory
Assignment – III [Q1-Q2:CO3, Q3: CO4, Q4:CO5]

1. Write a program that will find out whether a system is in safe state or not with following specifications:

Command line input: name of a file - The file contains the initial state of the system as given below:
#no of resources 4 #no of instances of each resource 2 4 5 3
#no of processes 3 #no of instances of each resource that each process needs in its lifetime 1 1 1 1, 2 3 1 2, 2 2 1 3
The program waits to accept a resource allocation request to be supplied by the user or read from another file:
For example: 0 1 0 1 1 indicates that p0 has requested allocation of 1 instance of R0, R2 and R3 each.
Your program should declare the result:
(1) should this request be granted?
(2) if your answer is yes, print the safe sequence in which all remaining needs can be granted one by one and also grant the request. If the requesting process's need is NIL, the program internally releases all its resources. Go back to accept another request till all processes finish with all their needs.
Testing:

a. Generate possible request sequences of each process.
b. Each such sequence must satisfy the maximum requirements of the process.

2. Write a program to simulate *Indexed File Allocation* technique.

3. Write a program to simulate *paging* for multiple processes (say, 5) assuming you have a big enough main memory to accommodate all processes at a time. The user will provide the process id and the process size. You may assume the page size and the memory size.

4. Install and use *Snort*. Log and display the information recorded during your lab hours while using *Snort*.