OS Practical Exam

DIV A

Total Time - 40 Minutes

1. A system has four processes and five resources that can be allocated. The current allocation and maximum needs are as follows:

Process Id	Allocated	Maximum	Available
A	1 0 2 1 1	1 1 2 1 3	0 0 2 1 2
B	2 0 1 1 0	2 2 2 1 0	
C	1 1 0 1 0	2 1 3 1 0	
D	1 1 1 1 0	1 1 2 2 1	

   Write a C program to schedule processes such that there will be no deadlock. The program should output the order in which processes are allocated resources.

2. Write a program to implement and simulate the Memory Management with Fixed Partition algorithm (MFT). Consider the scenario where the memory is divided in two parts and the process is fit into it. The process which is best suited will be placed in the particular memory where it suits. In MFT, the memory is partitioned into fixed size partitions and each job is assigned to a partition. The memory assigned to a partition does not change.In MVT, each job gets just the amount of memory it needs. That is, the partitioning of memory is dynamic and changes as jobs enter and leave the system. MVT is a more ``efficient'' user of resources. MFT suffers with the problem of internal fragmentation and MVT suffers with external fragmentation.
3. There is a seminar to be held tomorrow in College. BOB is too anxious to know about his turn, i.e. when he would be presenting on his topic. The turns are allocated on the basis of priority of each individual student. BOB being weak in maths asked Alice for help.
   Now Alice knows that, The priority of each individual student is defined by the function,

   $F(T) = (M*T) - C , T > 0$

   $= C , T = 0$

   where, 'M' is the maximum of all initially allocated priorities. 'C' is the current priority of the student. 'T' represents the current time.
   Just print the correct sequence in which students would be giving their seminars.(take necessary input by yourself).