1. Name and describe 5 states of a process.

New state: The process is being created

Ready state: Instructions are being executed

Waiting state: The process is waiting for some event to occur

Ready state: The process is waiting to be assigned to a processor

Terminated state: The process has finished execution

1. Describe four benefits of multithreaded programming.
2. Multi thread synchronization practice, Bank System:

a. Write a BankAccount class which implements:

i. deposit(int amount)

ii. withdraw(int amount)

iii. getBalance()

b. Write a main function to simulate the bank system. Use multi threading to randomly deposit or withdraw random amount.

c. Handle the synchronization and guarantee the balance is always >= 0.

1. Consider the following set of processes, with the length of the CPU burst given in milliseconds:

P1 2 sec, P2 1sec, P3 8sec, P4 4 sec, P5 5sec.

Find the turn around time, and waiting time for FCFS and SJF algorithms.

1. Bankers algorithm:

                Allocation                Max                               Available

             A    B    C    D          A    B    C    D              A    B    C    D

P0       0     0     1    2           0    0     1    2              1    5     2    0

P1       1     0     0    0           1    7     5    0

P2       1     3     5    4           2    3     5    6

P3       0     6     3     2          0    6     5    2

P4       0     0      1    4          0    6     5    6

Is there a safe sequence in which the processes can execute without deadlock?