GANPAT UNIVERSITY
U.V.PATEL COLLEGE OF ENGINEERING
2CEIT401: OPERATING SYSTEM
ASSIGNMENT 1 – FEB 2023

1. Differentiate between process and threads.
2. Explain fork() system call with example.
3. Consider set of process with arrival time (milliseconds), CPU burst time, service time (milliseconds), priority (lower the value, higher the priority). As shown below none of the process has I/O burst time. Calculate Average waiting time and average turnaround time by applying preemptive priority scheduling algorithm.

P_id	A.T	B.T	Priority
p1	0	11	2
p2	5	28	0
p3	12	2	3
p4	2	10	1
p5	9	16	4

4. Consider the following set of processes, assumed to have arrived at time 0. Consider the CPU scheduling algorithms Shortest Job First (SJF) and Round Robin (RR). For RR, assume that the processes are scheduled in the order P_1, P_2, P_3, P_4.

Processes	P_1	P_2	P_3	P_4
Burset Time (in ms)	8	7	2	4

   If the time quantum for RR is 4, then find the average turnaround time & waiting time of SJF and RR.
5. What is preemptive and non-preemptive scheduling? Under which circumstances CPU scheduling take place?
6. Discuss various scheduling criteria.
7. Define following:
   - (a) Race condition
   - (b) Critical section
   - (c) Mutual exclusion
   - (d) Starvation
   - (e) Kernel
   - (f) System calls
8. Explain process state diagram and various types of schedulers.
9. Explain the function of memory management & how the degree of multiprogramming depends on memory management.
10. What is address binding? Describe all its types with reference to absolute, relocatable, logical, virtual & physical addresses.
11. What is the role of relocation registers in MMU? How is memory protection used between one process to another?
12. Explain all contiguous memory allocation techniques with its advantages & disadvantages.
13. Consider five memory partitions of size 100 KB, 500 KB, 200 KB, 450 KB and 600 KB in the same order. If a sequence of requests for blocks of size 212 KB, 417 KB, 112 KB and 426 KB in the same order come, then which of the following algorithms makes the efficient use of memory?
    - (A) Best fit algorithm
    - (B) First fit algorithm
    - (C) Next fit algorithm
    - (D) Both next fit and best fit results in the same.

NOTE: WRITE IN NOTEBOOK, SUBMIT TO YOU CLASS'S LECTURE FACULTY BEFORE DEADLINE (10-03-2023).