Code No: 154BR

R18

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, August/September - 2021
OPERATING SYSTEMS
(Common to CSE, IT, ITE)

Time: 3 Hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks
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1.a) Describe the system components of an operating system and explain them briefly.
b) Discuss the Functionalities of Operating Systems in detail. [8+7]

2. What is a System call? Discuss major System calls of Operating Systems. [15]

3. Explain and give the differences in how much the following scheduling algorithms discriminate in favor of short processes.
a) Multilevel feedback queues
b) FCFS
c) RR. [5+5+5]

4. Consider 3 processes P1, P2 and P3 which require 5, 7 and 4 time units and arrive at time 0, 1 and 3. Draw the Gant chart, process completion sequence and average waiting time for.
a) Round robin scheduling with CPU quantum of 2 time units.
b) FCFS. [7+8]

5. Consider a system with three processes and four resources. Resource R1 and R3 with one instance, R2 with two instances, process P1 holding an instance of R2 and waiting for R1, process P2 is holding an instance of R1 and R2 and waiting for R3, process P3 is holding an instance of R3:
a) Draw a resource allocation graph to the given system.
b) Is it possible to apply the Resource allocation graph algorithm to avoid deadlock? Explain. [8+7]

6. What is the need of Page replacement? Consider the following reference string
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1.
Find the number of Page Faults with FIFO, Optimal Page replacement and LRU with four free frames which are empty initially. Evaluate which algorithm gives the minimum number of page faults? [15]

7.a) Explain the Logical versus Physical Address Space.
b) List the advantages and disadvantages of Demand Paging. [7+8]

8. Explain the following:
a) close b) lseek c) stat [5+5+5]

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