Sardar Patel Institute of Technology
Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India
(Autonomous College Affiliated to University of Mumbai)

Mid Semester Examination

March 2020

Max. Marks: 20 | Duration: 1 Hr.
Class: S.E. | Semester: IV
Course Code:IT44/CE43 | Branch: IT/Comps.
Name of the Course: Operating Systems

Instruction:
(1) All questions are compulsory
(2) Draw neat diagrams
(3) Assume suitable data if necessary

Q. No.		Max. Marks	CO-BL-PI

1 a)	What will be the output of the following code and why?
	
	#include <stdio.h>
	#include <sys/types.h>
	#include <sys/wait.h>
	#include <unistd.h>
	int main(int argc, char* argv[])
	{
	
	if (fork()==0)
	{
	printf("hello");
	exit(0);
	}
	else
	{
	wait(0);
	printf("world");
	}
	}
		2	1-2-2.4.2

b)	Explain any two function of operating systems.	2	1-2-2.2.2
c)	Explain booting in detail.	2	1-2-2.2.2

<table>
<tr><td>2 a)</td><td>Calculate the predicted burst time using exponential averaging for the fifth process if the predicted burst time for the first process is 10 units and actual burst time of the first four processes is 4, 8, 6 and 7 units respectively. Given α = 0.5.</td><td>2</td><td>2-3-2.4.1</td></tr>
<tr><td>b)</td><td>Consider the following set of processes, with the arrival times and the CPU burst times given in milliseconds.
What is the average turnaround time and waiting time for these processes with the shortest remaining time first (SRTF) algorithm?
<table>
<tr><th>Process</th><th>Arrival time</th><th>Burst time</th></tr>
<tr><td>P1</td><td>0</td><td>5</td></tr>
<tr><td>P2</td><td>1</td><td>3</td></tr>
<tr><td>P3</td><td>2</td><td>3</td></tr>
<tr><td>P4</td><td>4</td><td>1</td></tr>
</table>
OR
Consider the set of 5 processes whose arrival time and burst time are given below. If the CPU scheduling policy is priority preemptive, calculate the average waiting time and average turn around time. (Note : Higher number represents higher priority)
<table>
<tr><th>Process</th><th>Arrival time</th><th>Burst time</th><th>Priority</th></tr>
<tr><td>P1</td><td>0</td><td>4</td><td>2</td></tr>
<tr><td>P2</td><td>1</td><td>3</td><td>3</td></tr>
<tr><td>P3</td><td>2</td><td>1</td><td>4</td></tr>
<tr><td>P4</td><td>3</td><td>5</td><td>5</td></tr>
<tr><td>P5</td><td>4</td><td>2</td><td>5</td></tr>
</table></td><td>5</td><td>2-3-2.4.1</td></tr>
<tr><td>3a)</td><td>The following two functions P1 and P2 that share a variable B with an initial value of 3 execute concurrently. The number of distinct values that B can possibly take after the execution is? Justify your answer.
P1( )
{
C=B-1;
B=2*C;
}
P2( )
{
D=2*B;
B=D-1;
}</td><td>4</td><td>3-3-2.4.1</td></tr>
<tr><td>Q.3.b)</td><td>What is critical section? Explain the requirements of critical section problem.</td><td>2</td><td>3-3-2.2.2</td></tr>
<tr><td>Q.3.c)</td><td>A counting semaphore S is initialized to 10. Then, 6 P operations and 4 V operations are performed on S. What is the final value of S?</td><td>1</td><td>3-3-2.4.1</td></tr>
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