# B. Tech III Sem- V - OS Practical Exam Quiz - Div A

Total No. of Questions - 10

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Consider the virtual page reference string **1, 2, 3, 2, 4, 1, 3, 2, 4, 1** .
On a demand paged virtual memory system running on a computer system that has main memory size of 33 page frames which are initially empty. Let LRU, FIFO and Optimal denote the number of page faults under the corresponding page replacement policy. Then

A. Optimal < LRU < FIFO
B. LRU > FIFO > Optimal
C. LRU = Optimal
D. FIFO = Optimal

- ○ A
- ◉ B
- ○ C
- ○ D

Clear selection

Consider m1, m2, m3 and m4 are mutexes and p1, p2, p3 and p4 are processes. If the following code executed by each process pi then it could cause

```
wait (mi);
wait (m[(i+1) mod 4]);
.......
release (mi);
release (m[(i+1) mod 4]);
```

A. Deadlock
B. Starvation
C. Both
D. None of the above

- (●) A
- ( ) B
- ( ) C
- ( ) D

Clear selection

Suppose we want to synchronize two concurrent processes P and Q using binary semaphores S and T. The code for the processes P and Q is shown below.

```
Process P:
while(1){
  W:
  Print '0';
  Print '0';
  X:
}

Process Q:
while(1){
  Y:
  Print '1';
  Print '1';
  Z:
}
```

Synchronization statements can be inserted only at points W, X, Y, and Z. Which of the following will always lead to an output starting with 001100110011

A. P(A) at W, V(S) at X, P(T) at Y, V(T) at Z, S and T initially 1
B. P(A) at W, V(T) at X, P(T) at Y, V(S) at Z, S initially 1 and T initially 0
C. P(S) at W, V(T) at X, P(T) at Y, V(T) at Z, S and T initially 1
D. P(S) at W, V(S) at X, P(T) at Y, V(T) at Z, S initially 1 and T initially 0

- ○ A
- ◉ B
- ○ C
- ○ D

Clear selection

A system has n resources $R_0$,.....,$R_{n-1}$, and k processes $P_0$,.....,$P_{k-1}$. The implementation of the resource request logic of each process $P_i$, is as follows:

```
if (i%2==0) {
  if (i < n) request Ri;
  if (i+2 < n) request Ri+2 ;
}
else {
  if (i < n) request Rn-i;
  if (i+2 < n) request Rn-i-2;
}
```

In which one of the following situations is a deadlock possible?

A. n = 40, k = 26
B. n = 21, k = 12
C. n = 20, k = 10
D. n = 41, k = 19

- ○ A
- ◉ B
- ○ C
- ○ D

Clear selection

Consider the following four processes with arrival times (in milliseconds) and their length of CPU bursts (in milliseconds) as shown below :

| **Process** | P1 | P2 | P3 | P4 |
|---|---|---|---|---|
| **Arrival Time** | 0 | 1 | 3 | 4 |
| **CPU Burst Time** | 3 | 1 | 3 | X |

These processes are run on a single processor using preemptive Shortest Remaining Time First scheduling algorithm. If the average waiting time of the processes is 1 millisecond, then find the value of **X**.

A. 2
B. 5
C. 0
D. 3

- (●) A
- ( ) B
- ( ) C
- ( ) D

Clear selection

The following two functions P1 and P2 that share a variable B with an initial value of 2 execute concurrently.

```
P1( ) {
  C = B - 1;
  B = 2 * C;
}


P2( ) {
  D = 2 * B;
  B = D - 1;
}
```

The number of distinct values that B can possibly take after the execution is_____.

A. 3
B. 4
C. 5
D. 6

- (●) A
- ( ) B
- ( ) C
- ( ) D

Clear selection

Suppose the following disk request sequence (track numbers) for a disk with 100 tracks is given:

**45, 20, 90, 10, 50, 60, 80, 25, 70.**

Assume that the initial position of the R/W head is on track 50. The additional distance that will be traversed by the R/W head when the Shortest Seek Time First (SSTF) algorithm is used compared to the SCAN algorithm (assuming that SCAN algorithm moves towards 100 when it starts execution) is_____ tracks.

A. 10
B. 12
C. 8
D. 14

- (●) A
- ( ) B
- ( ) C
- ( ) D

Clear selection

Consider the given code:

```
if (fork() == 0)
{
   p = p + 7;
   printf("%d, %d \n", p, &p);
}
else
{
   p = p - 7;
   printf ("%d, %d \n", p, &p);
}
```

Let p1, p2 be the values printed by the parent process, and c1, c2 be the values printed by the child process. Which one of the following is TRUE?

A. p1 +14=c1 and p2=c2
B. p1 +14=c1 and p2!=c2
C. p1 = c1+14 and p2=c2
D. p1 = c1+14 and p2!=c2

- (●) A
- ( ) B
- ( ) C
- ( ) D

Clear selection

If an instruction takes i microseconds and a page fault takes an additional j microseconds, the effective instruction time if on the average a page fault occurs every k instruction is:

A. i+(j/k),
B. i+j*k,
C. (i+j)/k,
D. (i+j)*k

- (●) A
- ( ) B
- ( ) C
- ( ) D

Clear selection

Consider the following synchronization by the processes P1 and P2 want to access critical section

```
/* P1 */
  while(true){
  w1=true;
  while(w2 == true){
  /* Critical Section */
   w1 = false;
  }
  /* Reminder Section */
 }

/* P2 */
  while(true){
  w s2=true;
  while(w1 == true){
  /* Critical Section */
   w2 = false;
  }
  /* Reminder Section */
 }
```

w1 and w2 are shared variables, initialized to false. Which one of the following statements is TRUE about the above construct?

A. not ensure the mutual exclusion
B. Bounded waiting
C. requires that processes enter the critical section in strict alternation
D. not prevent the deadlocks, but ensures mutual exclusion

- ○ A
- ○ B
- ○ C
- ◉ D

Clear selection

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