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Course: Operating System

Assignment 2



Question 1

1, 3, 2, 4, 1, 3, 5, 1, 3, 2, 4, 5, 4, 2

already in memory

1	P ₁		2	2	3	3	3	3	3	4	4	4	4
3	P ₂		3	3	3	1	1	1	1	2	2	2	2
4	P ₃	1	1	1	4	4	4	5	5	5	5	5	5
		hit	hit	hit	*	*	*	*	hit	hit	*	*	hit
		hit	hit	hit	*	*	*	*	hit	hit	*	*	hit

$$\text{hit ratio} = \frac{8}{14} \times 100 = 57.14\%$$

1, 2, 3, 4, 5
 ↓ ↓ ↓ ↓ ↓
 0 0 0 0 0
 1 1 1 1 1
 0 0 0 0 0
 2 2 2 2 2
 0 0 0 0 0

Question 2

a) Yes, the concurrent execution of both above processes result in infinite wait because there will be deadlock.

b) We will use turn variable.

```
void P1() {
    while (true)
        while (turn != 0) {
            wait(S);
            wait(W);
            Signal(S);
            Signal(W);
            turn = 1;
        }
}
```

```
void P2() {
    while (true) {
        while (turn != 1) {
            wait(W);
            wait(S);
            Signal(W);
            Signal(S);
            turn = 0;
        }
    }
}
```