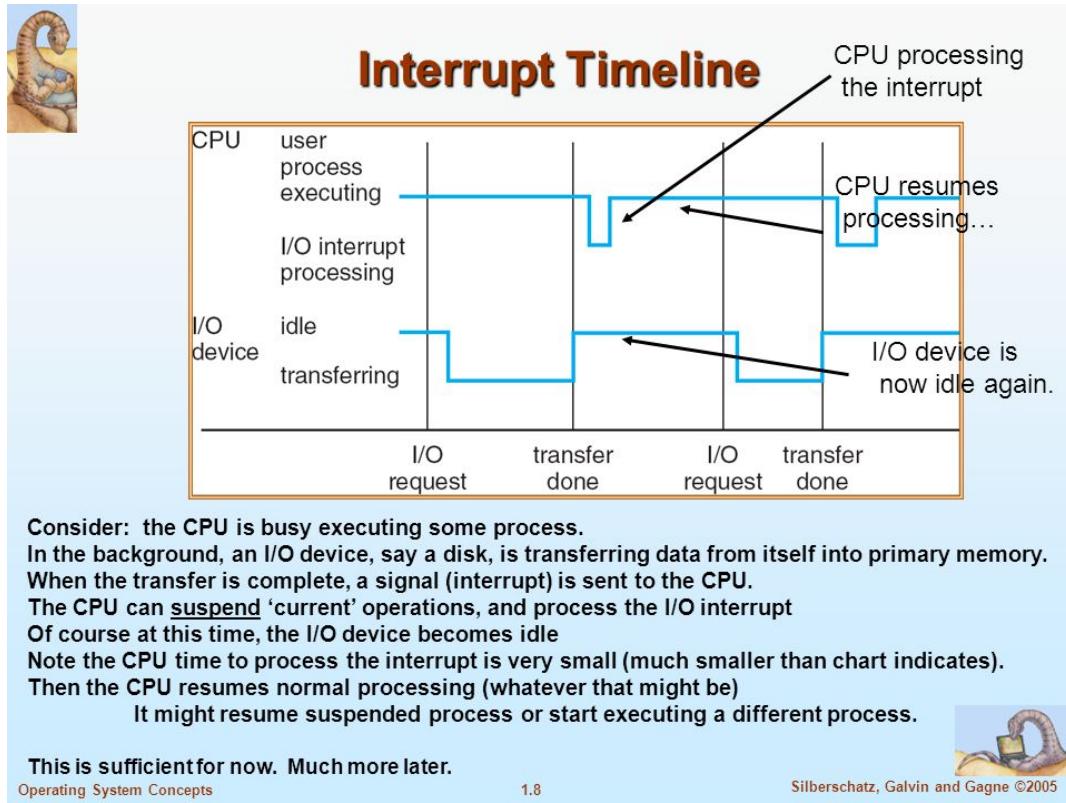


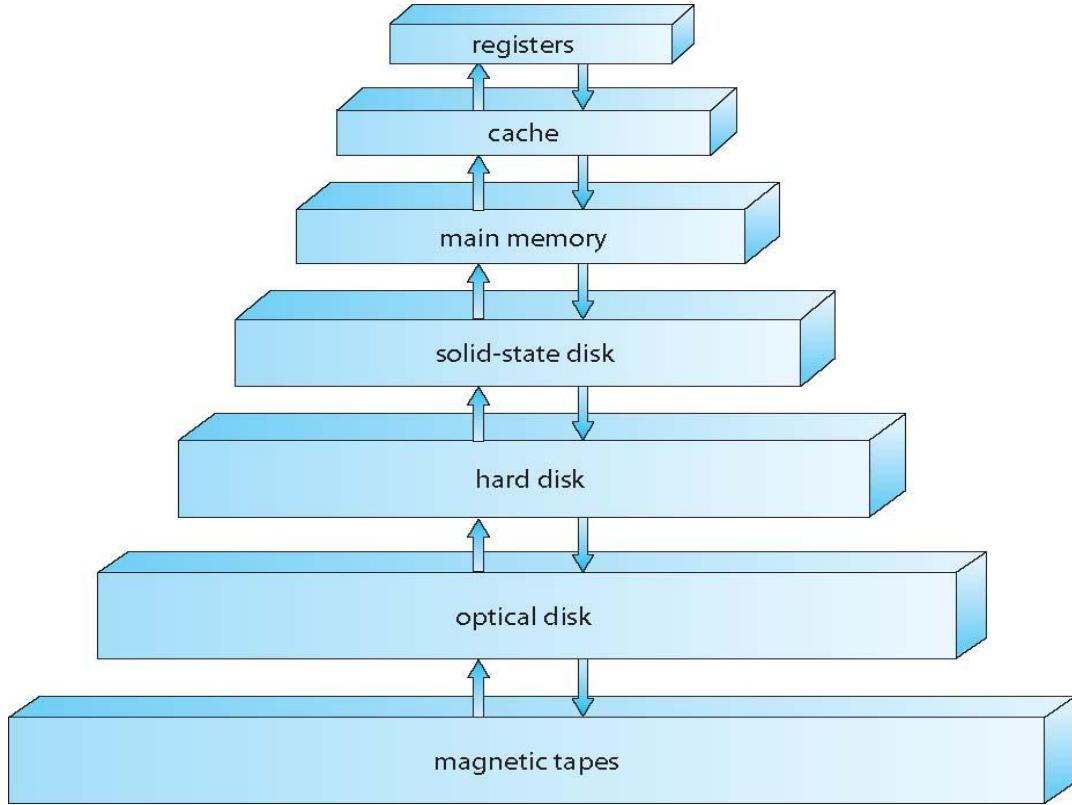
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



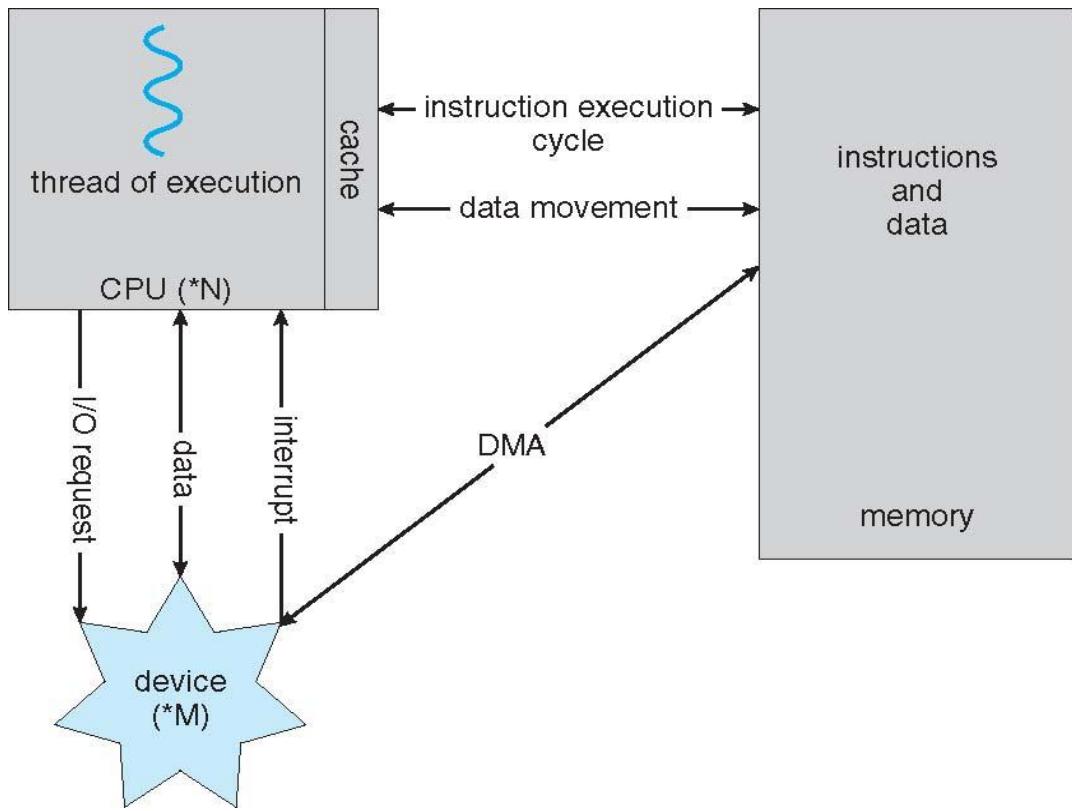
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



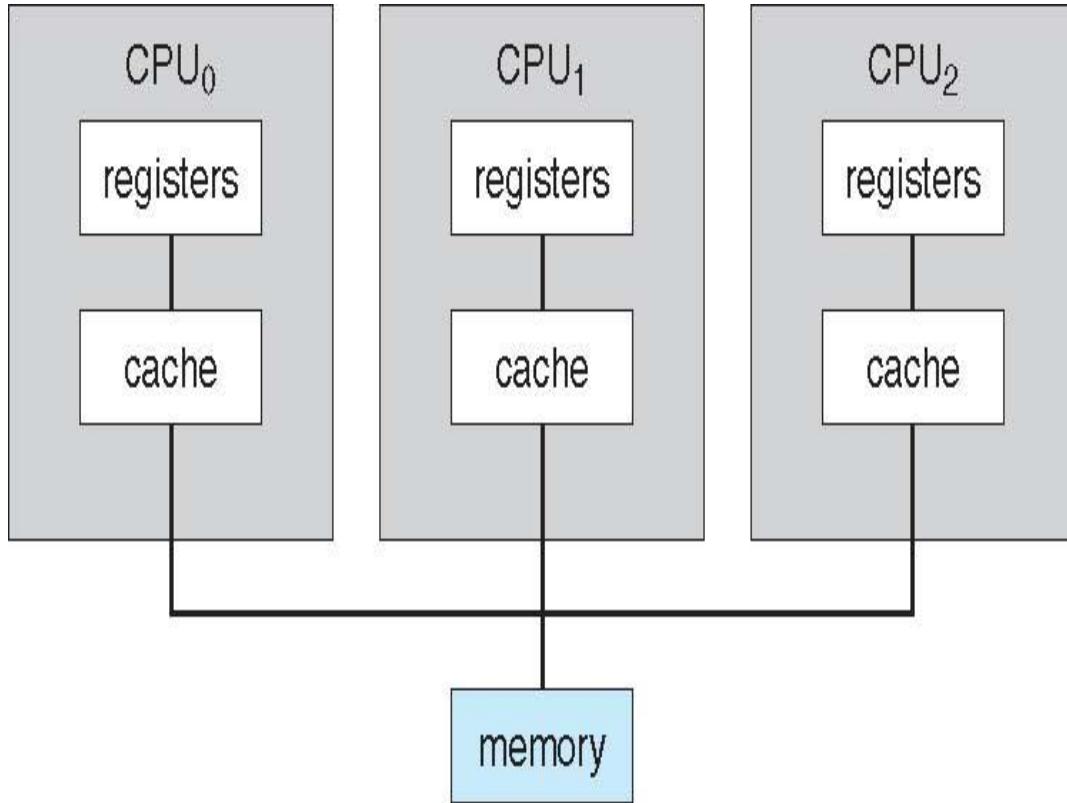
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



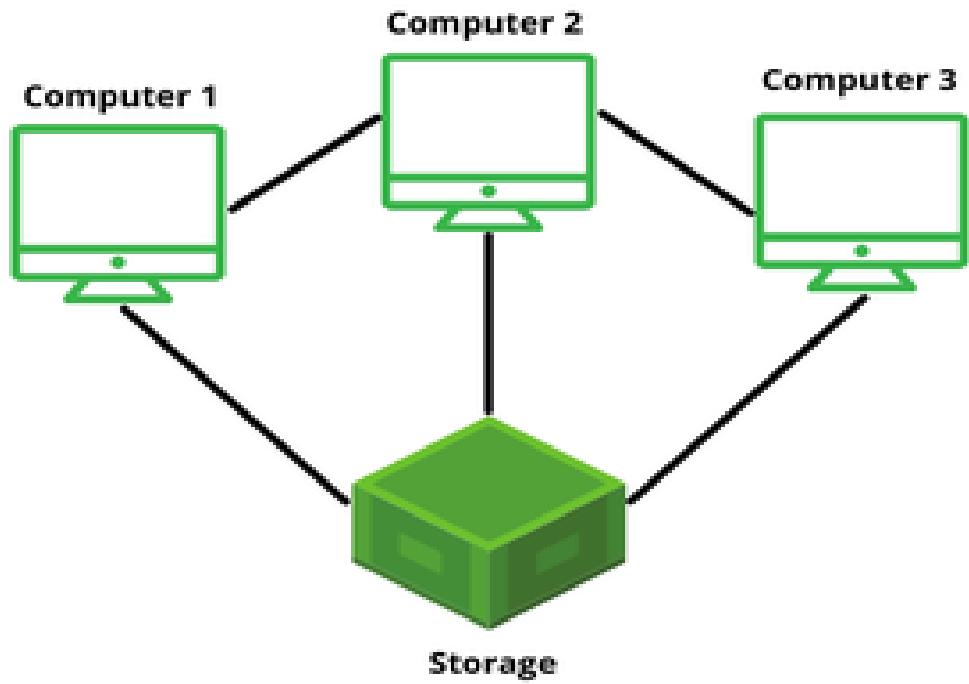
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



5-Mark Explanation:

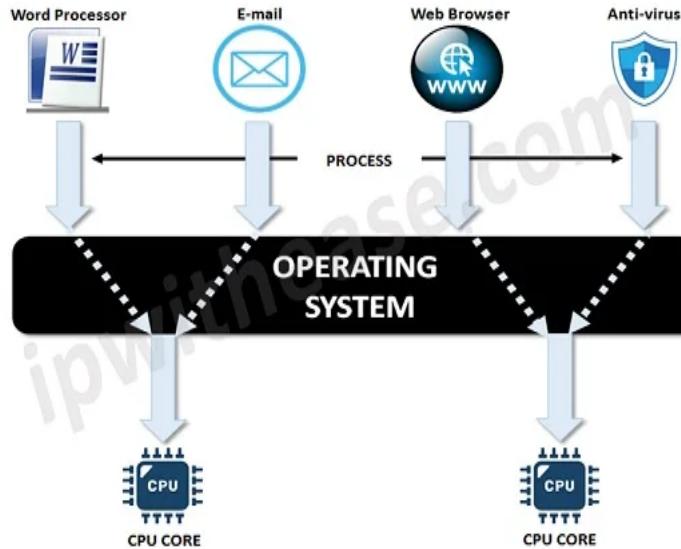
This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.

Multi-Tasking

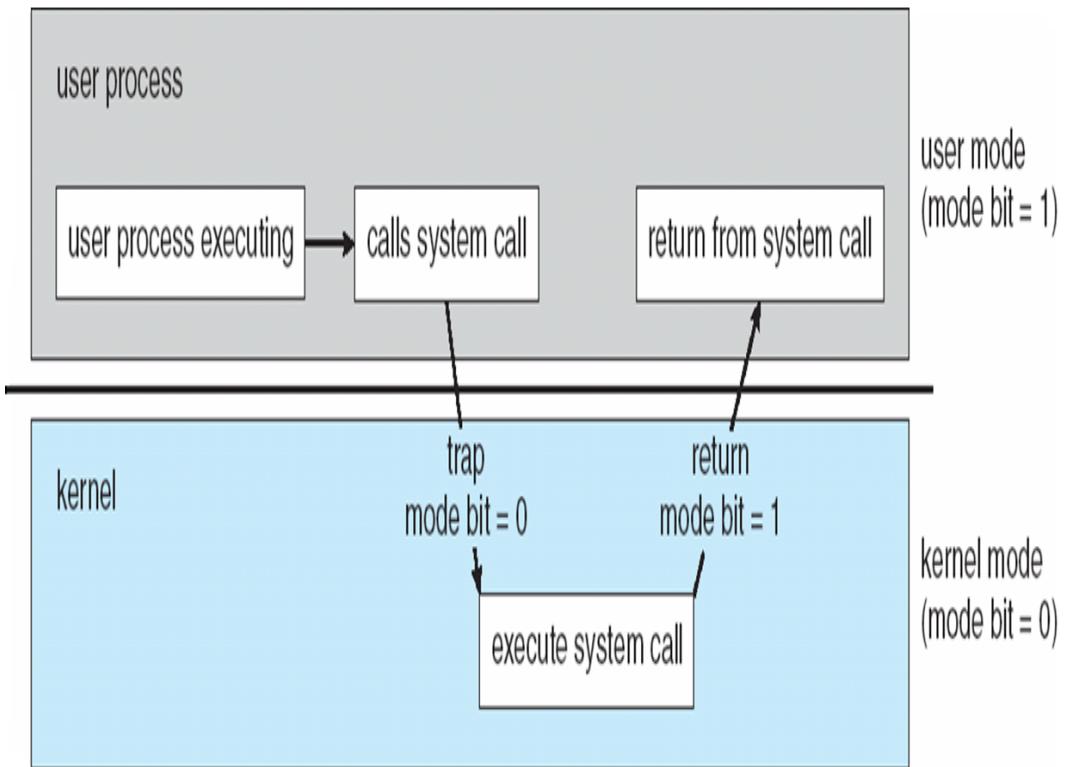


networkinterview.com

(An Initiative By ipwithease.com)

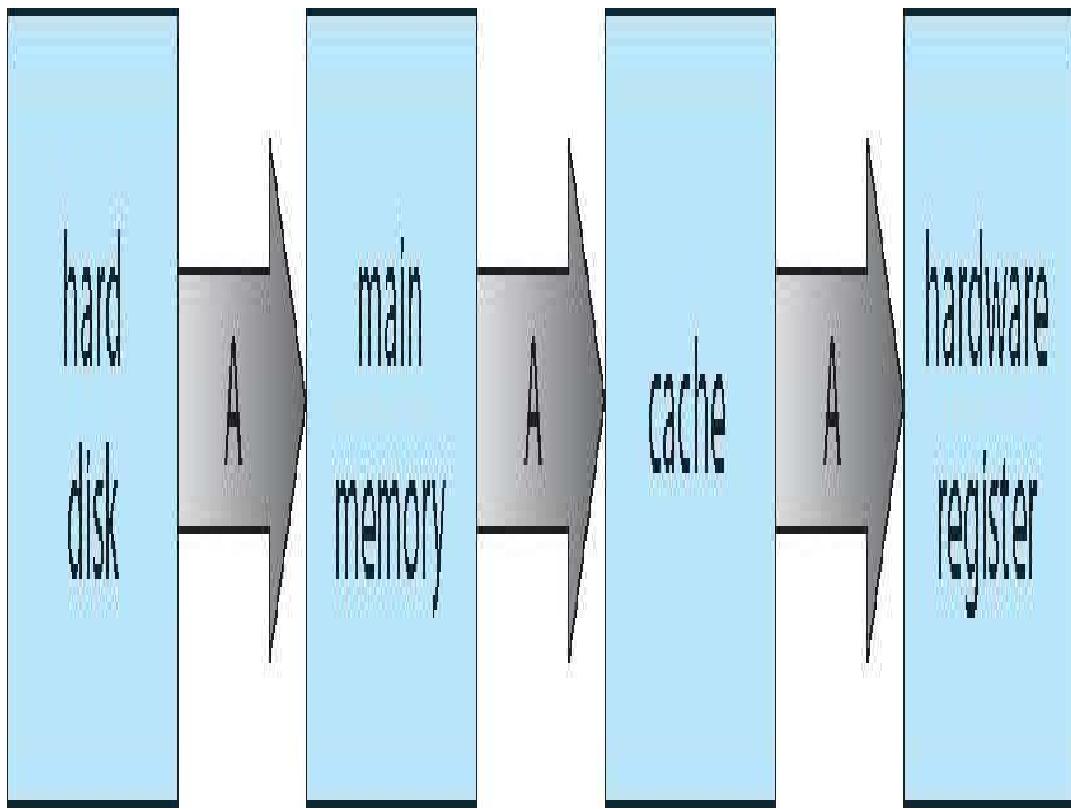
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



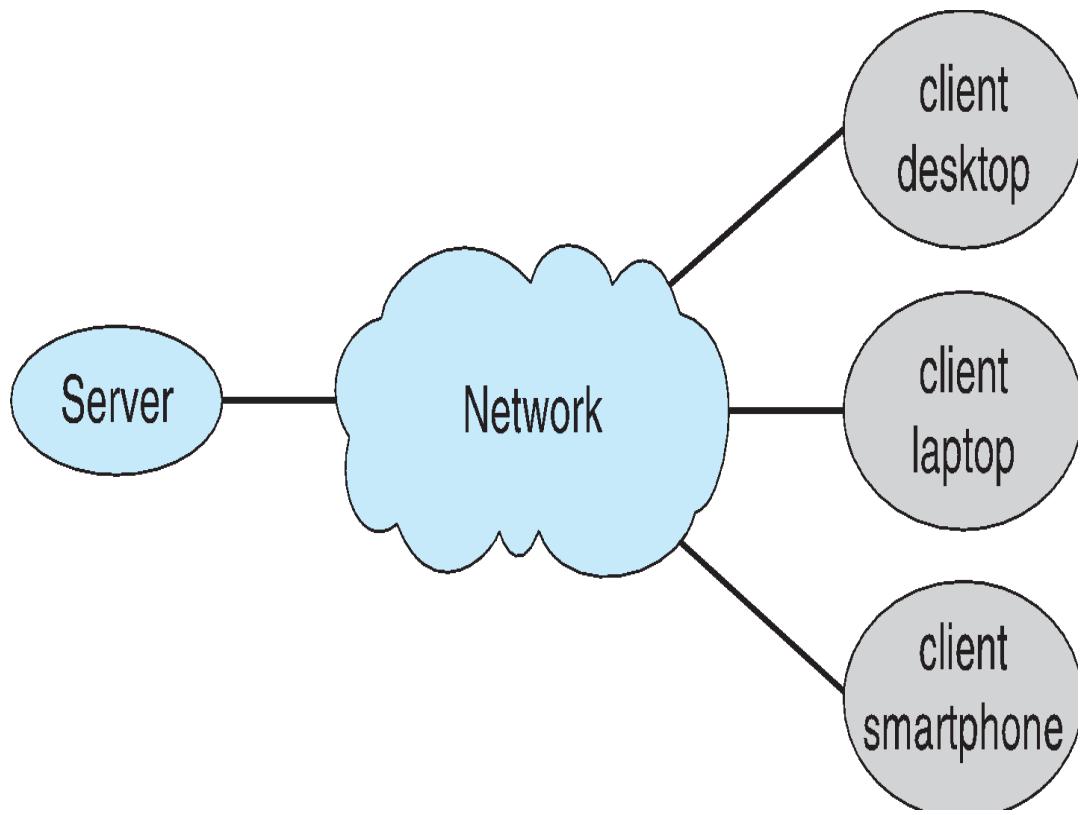
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



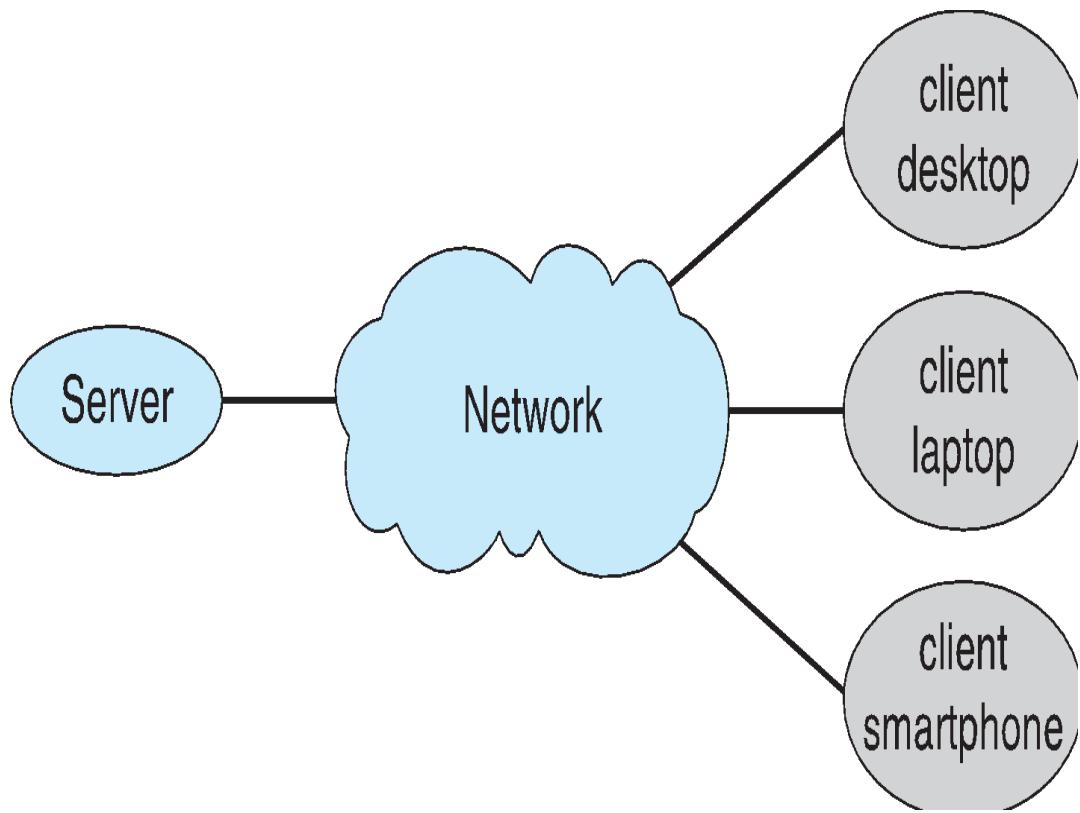
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



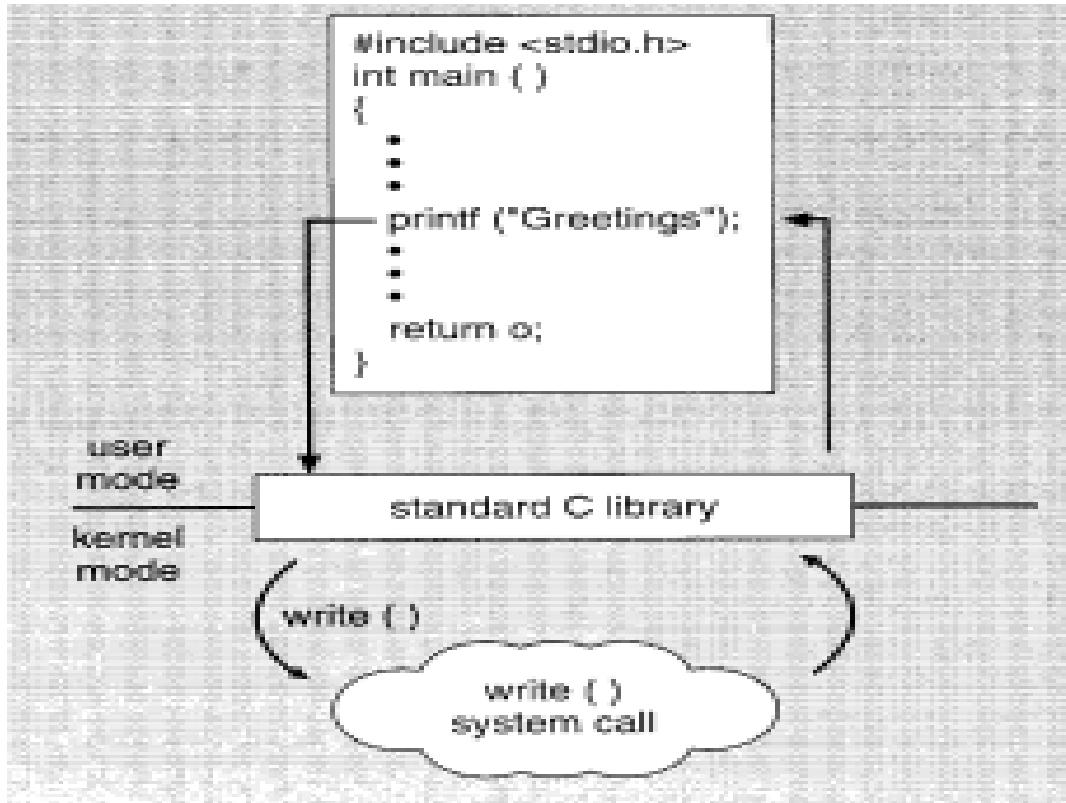
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



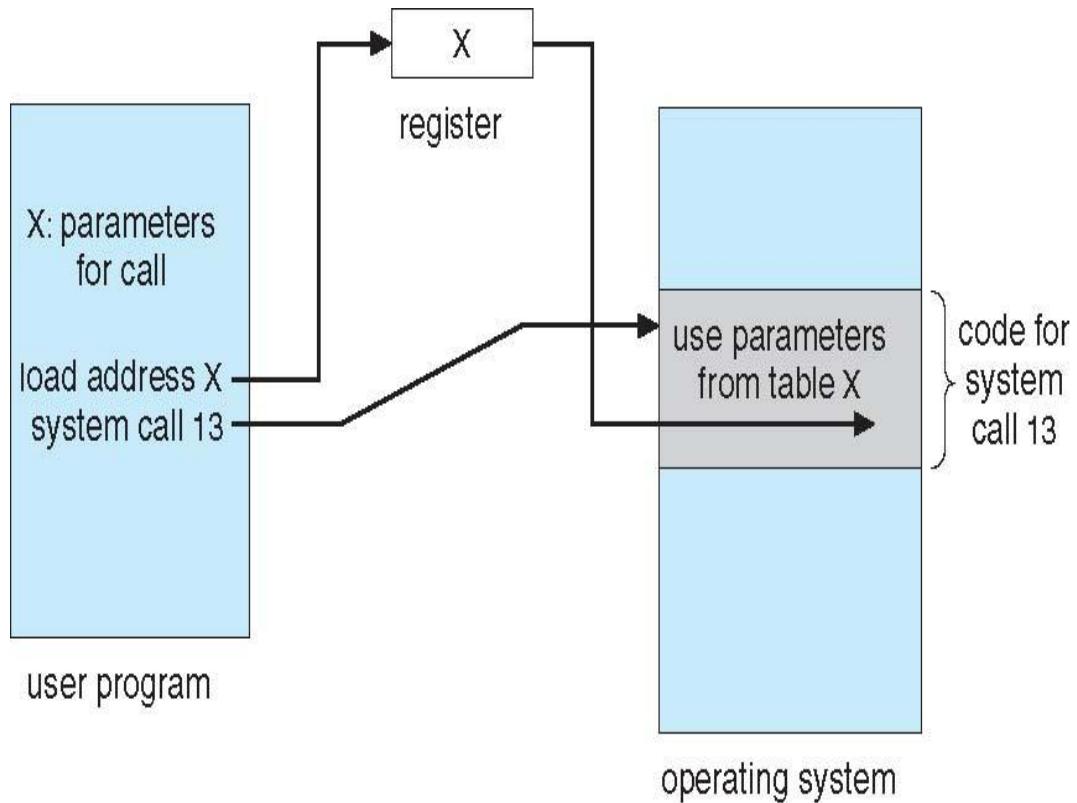
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



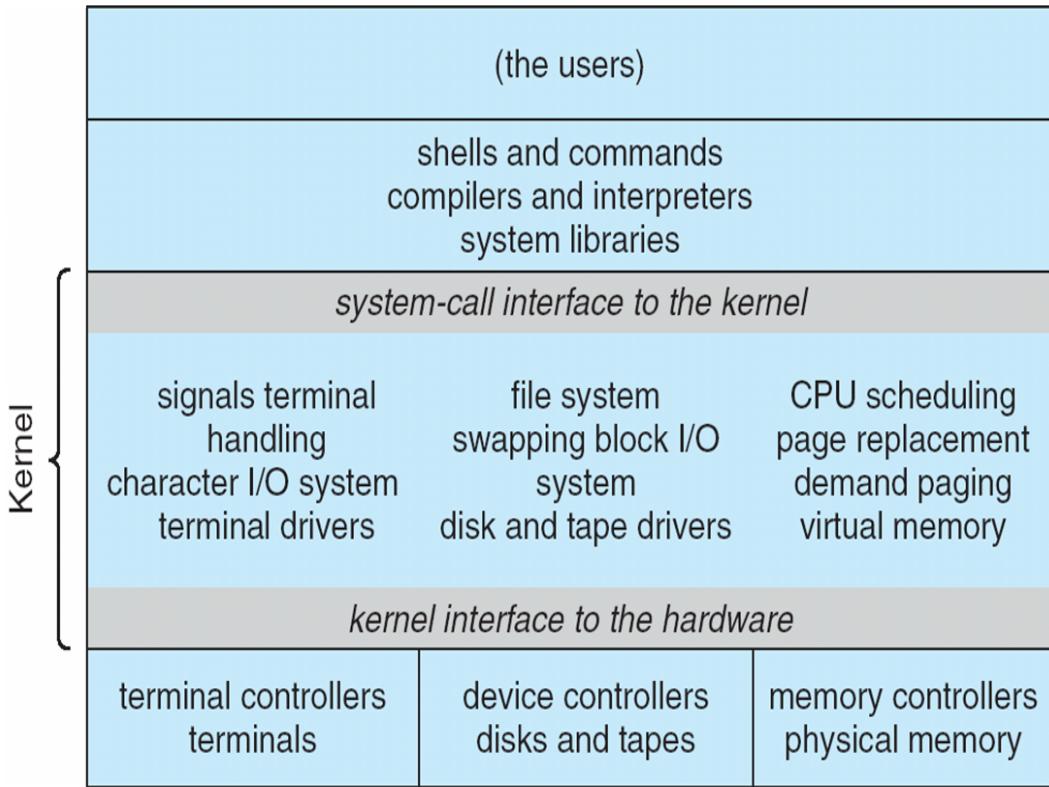
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



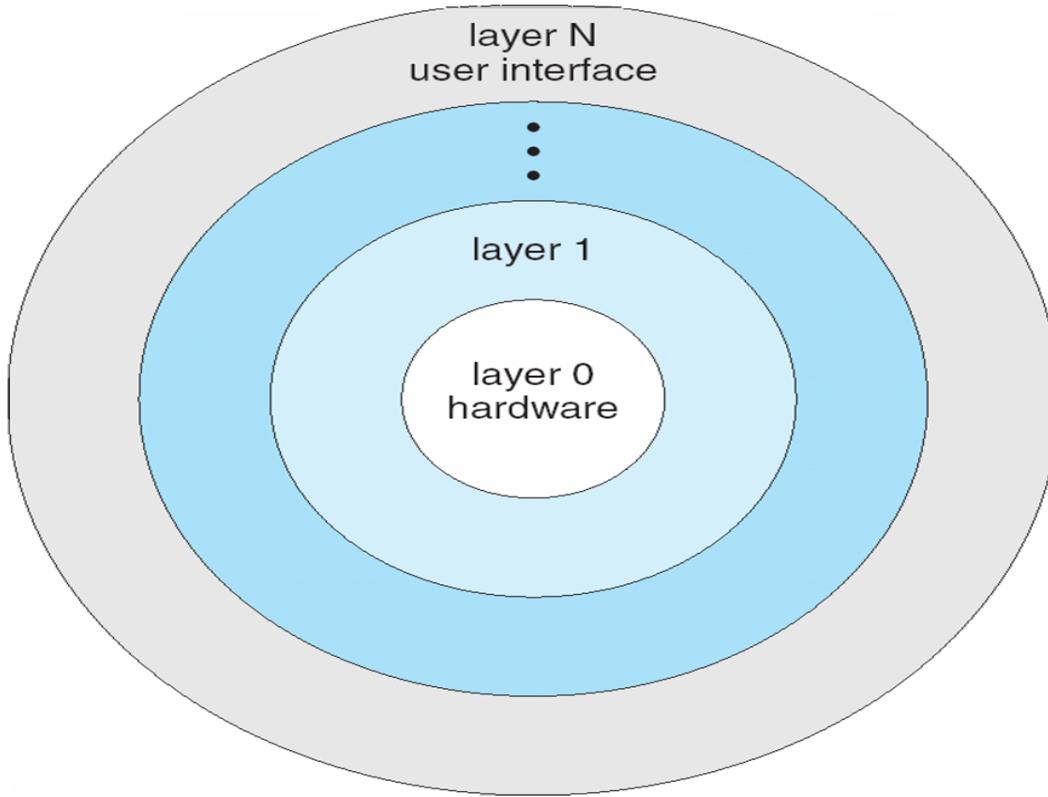
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



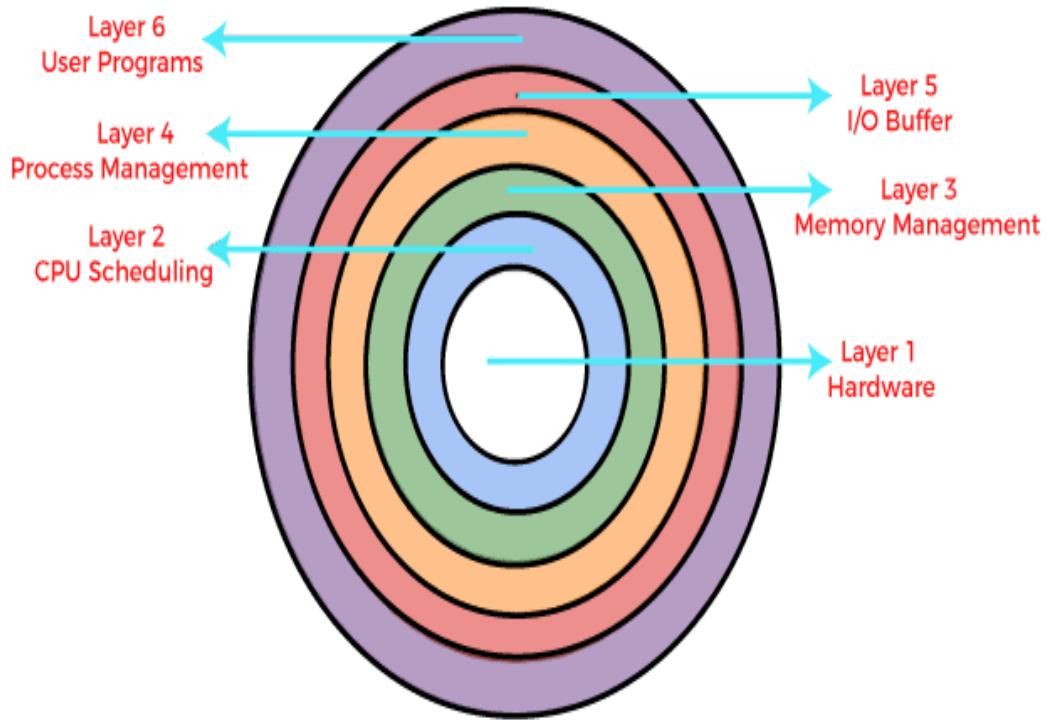
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



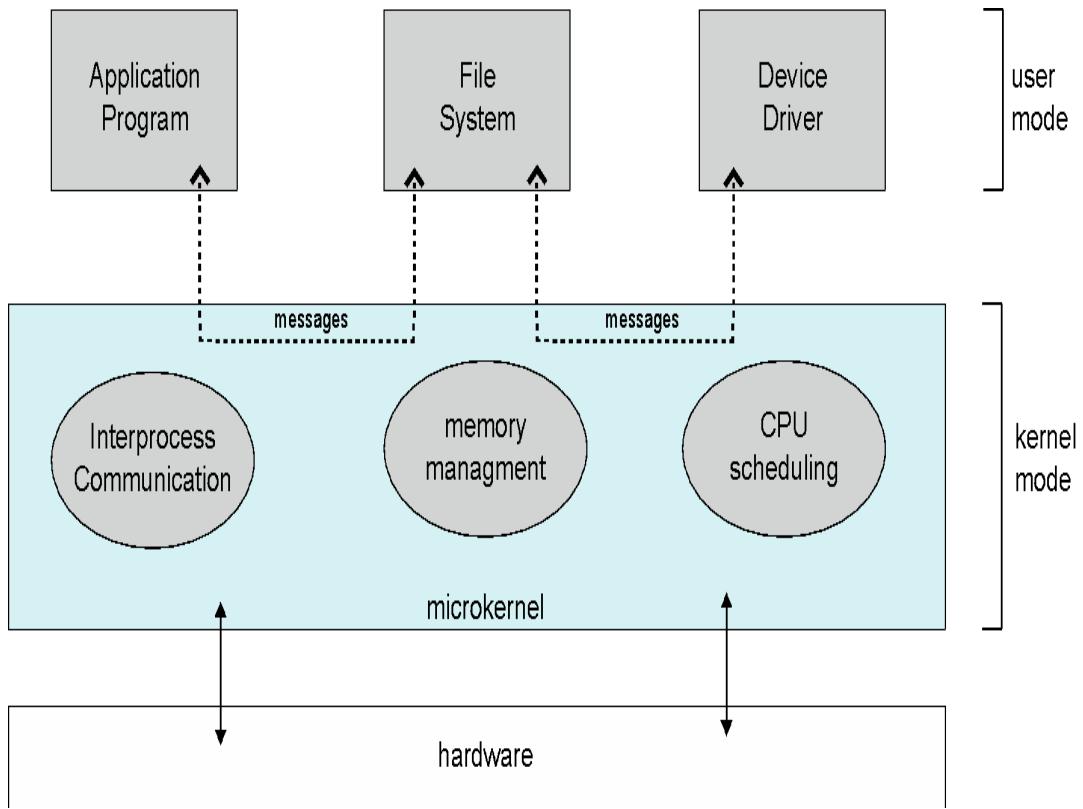
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



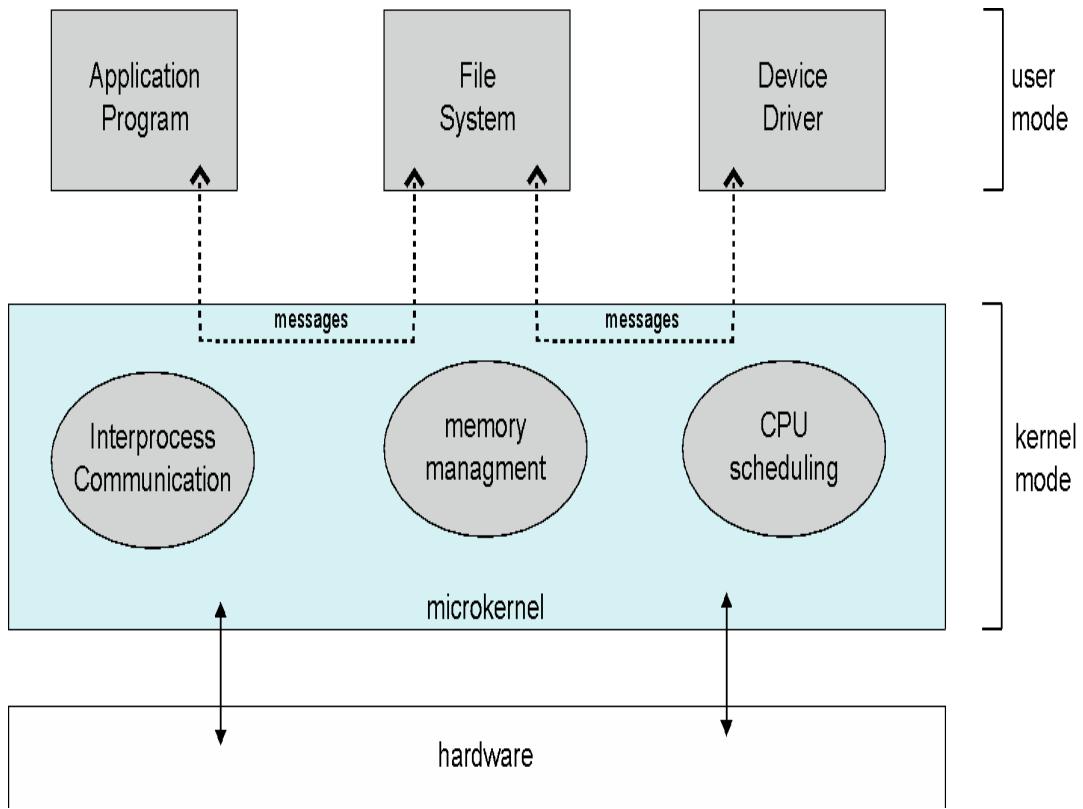
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



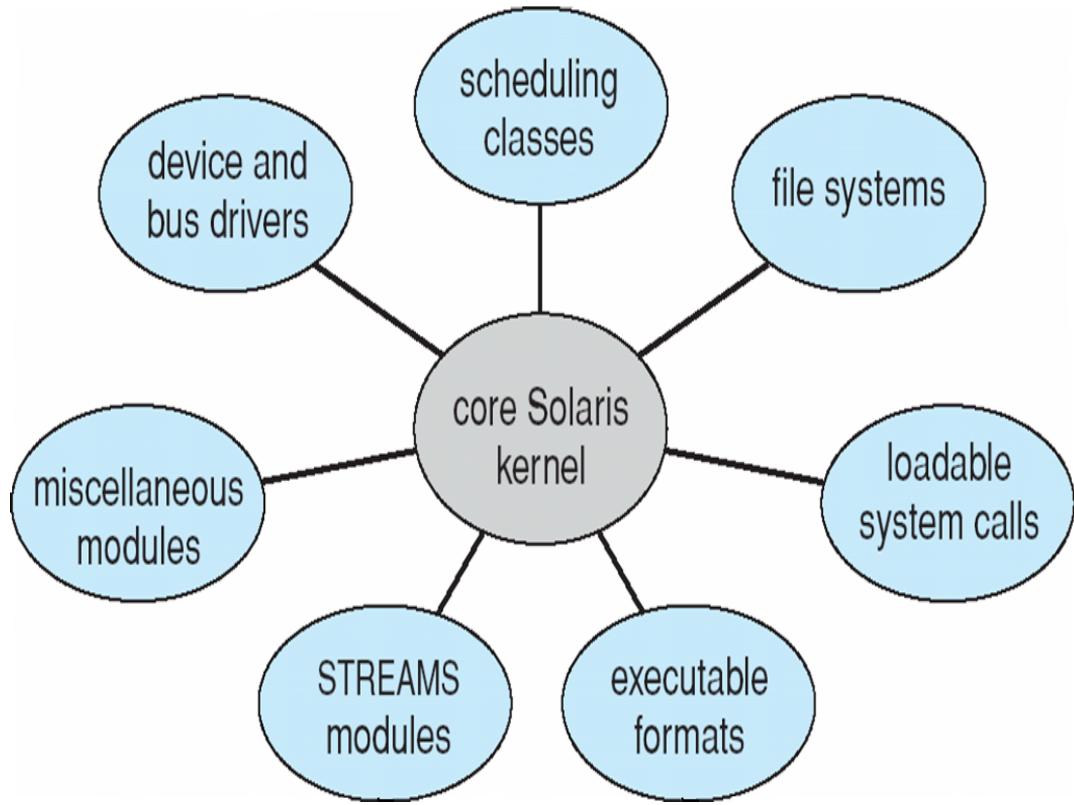
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



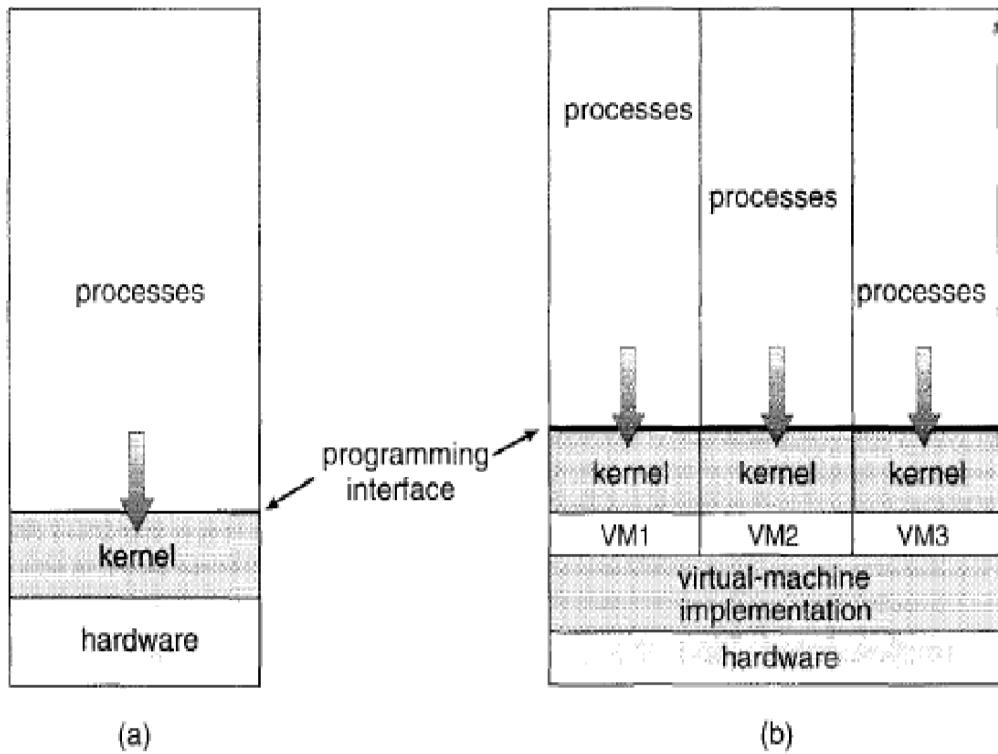
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



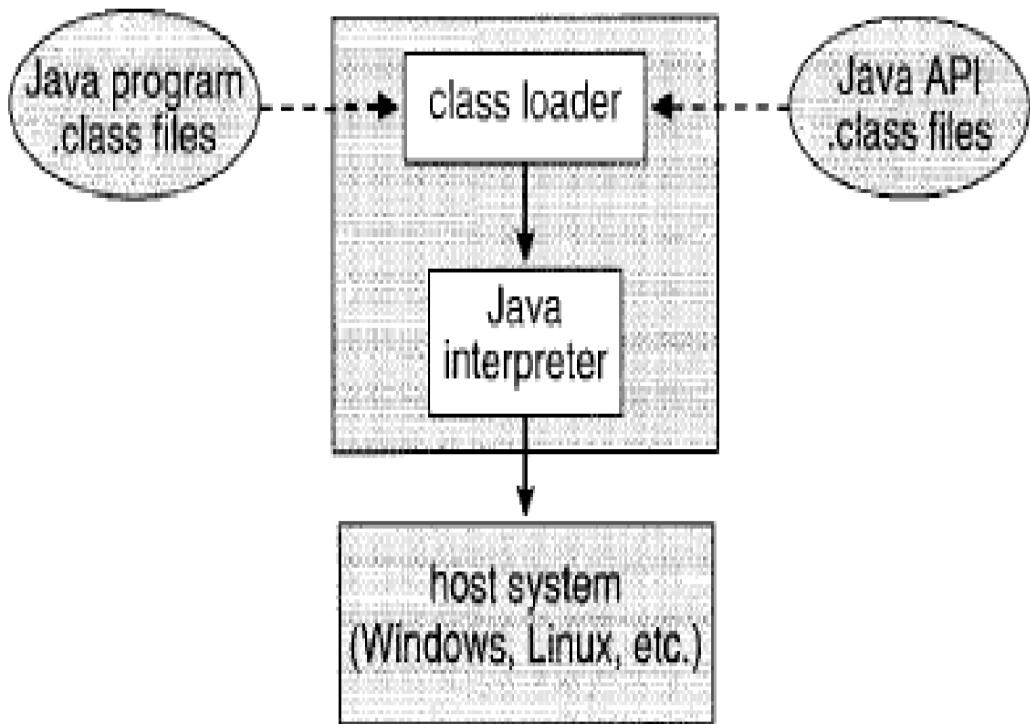
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



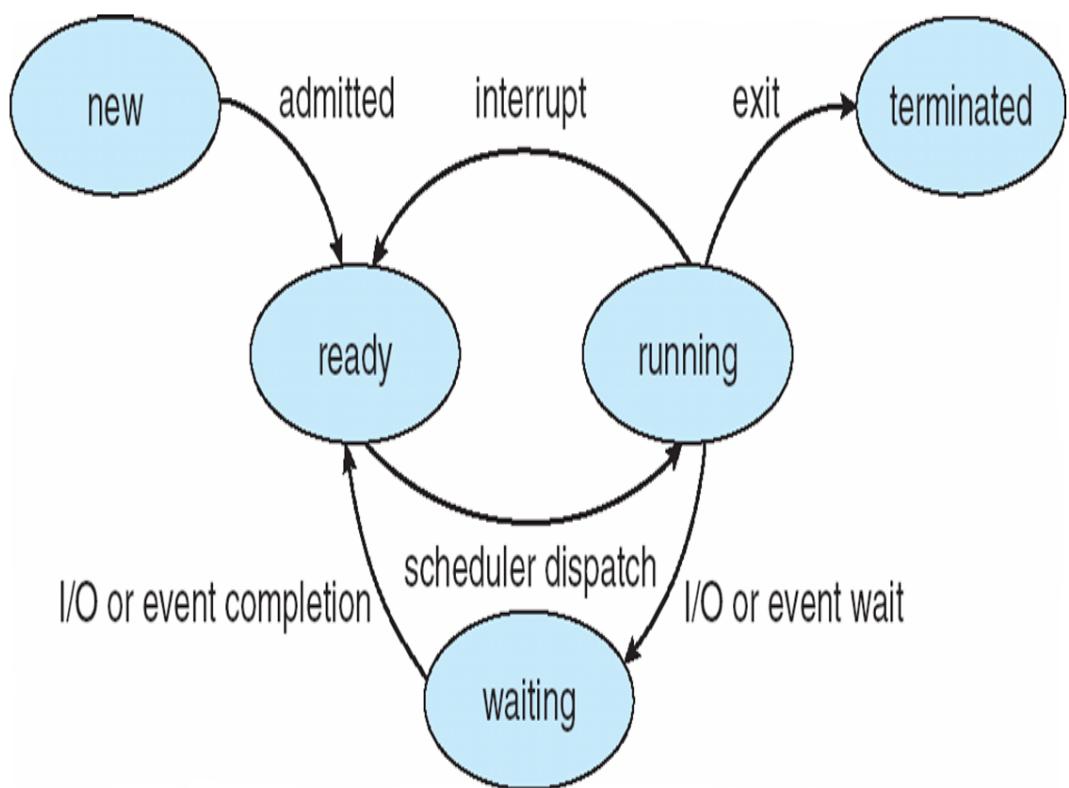
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



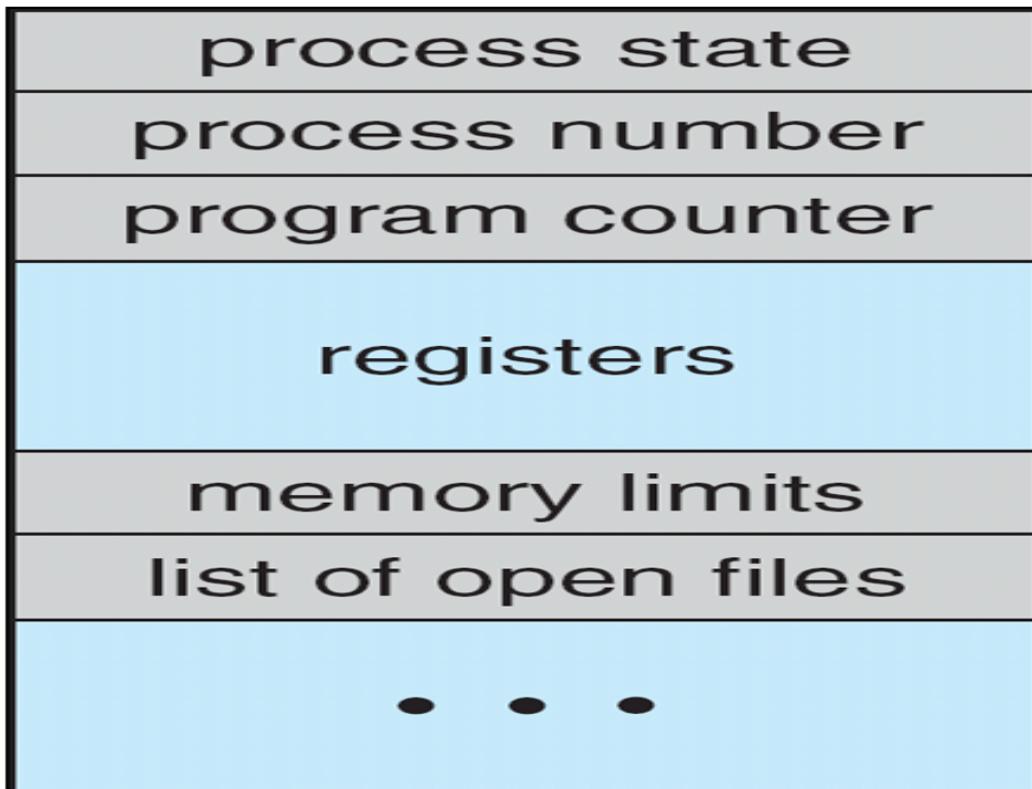
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



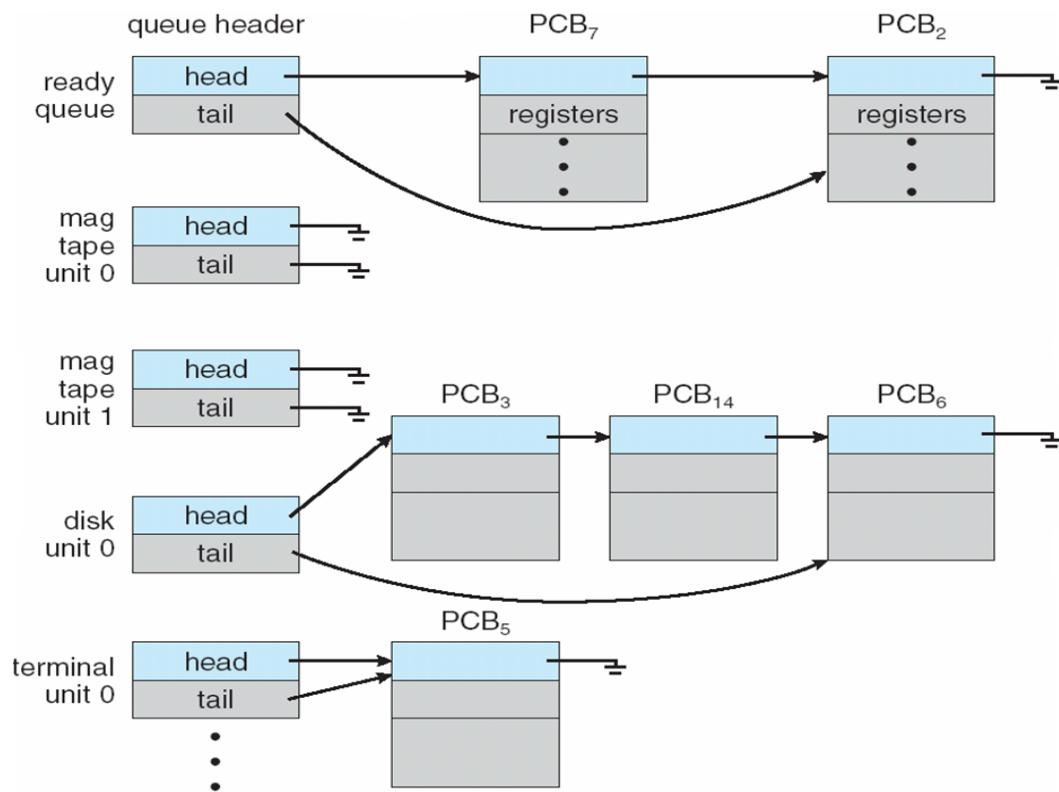
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.

```

#include <sys/types.h>
#include <stdio.h>
#include <unistd.h>

int main()
{
pid_t pid;

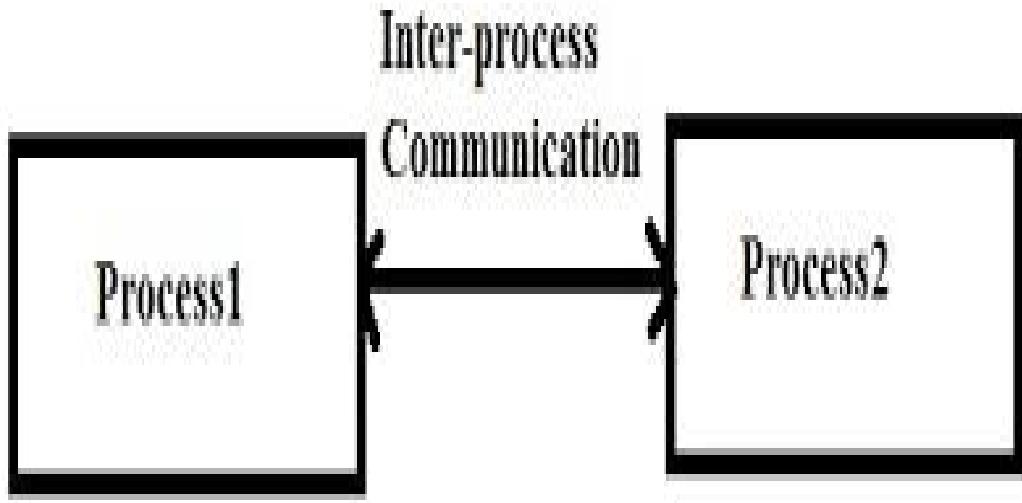
    /* fork a child process */
    pid = fork();

    if (pid < 0) {/* error occurred */
        fprintf(stderr, "Fork Failed");
        exit(-1);
    }
    else if (pid == 0) {/* child process */
        execvp("/bin/ls","ls",NULL);
    }
    else {/* parent process */
        /* parent will wait for the child to complete */
        wait(NULL);
        printf("Child Complete");
        exit(0);
    }
}

```

5-Mark Explanation:

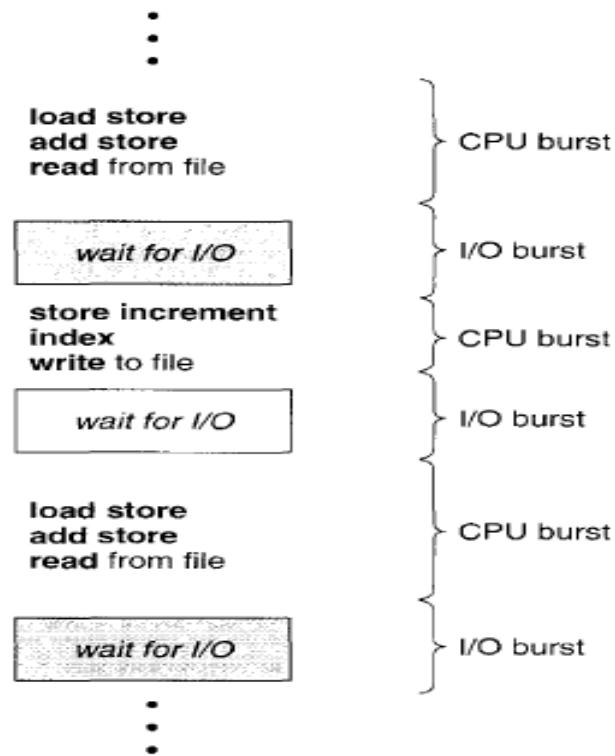
This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



©Elprocus.com

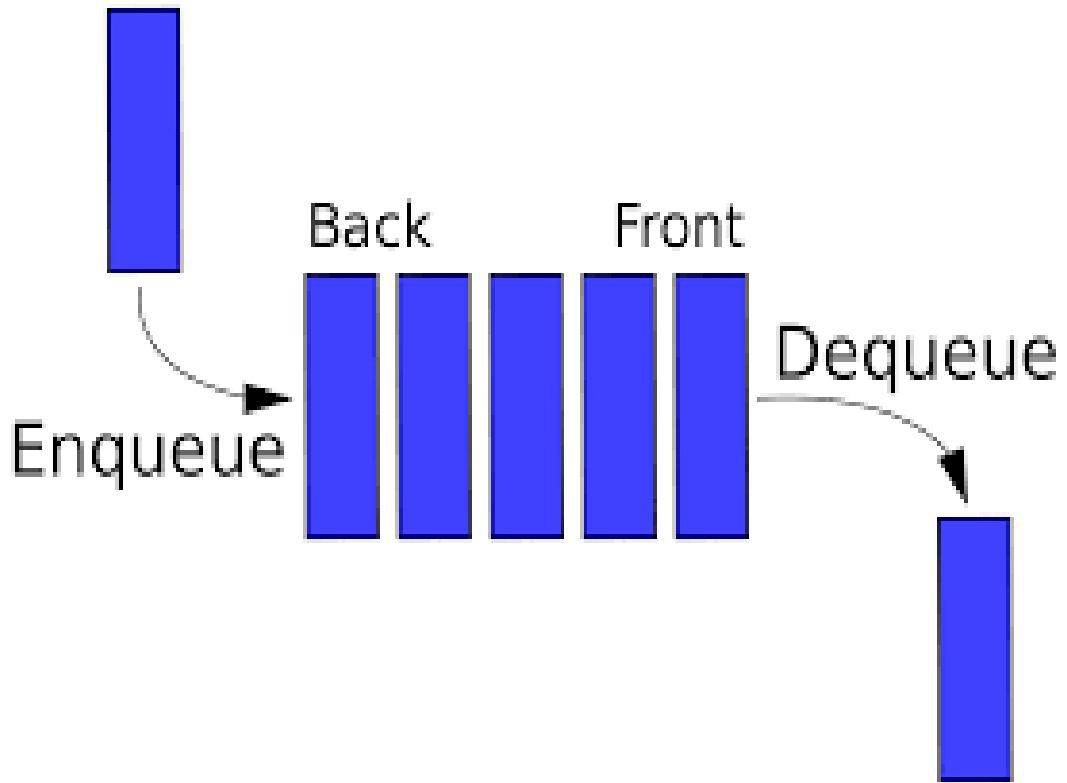
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



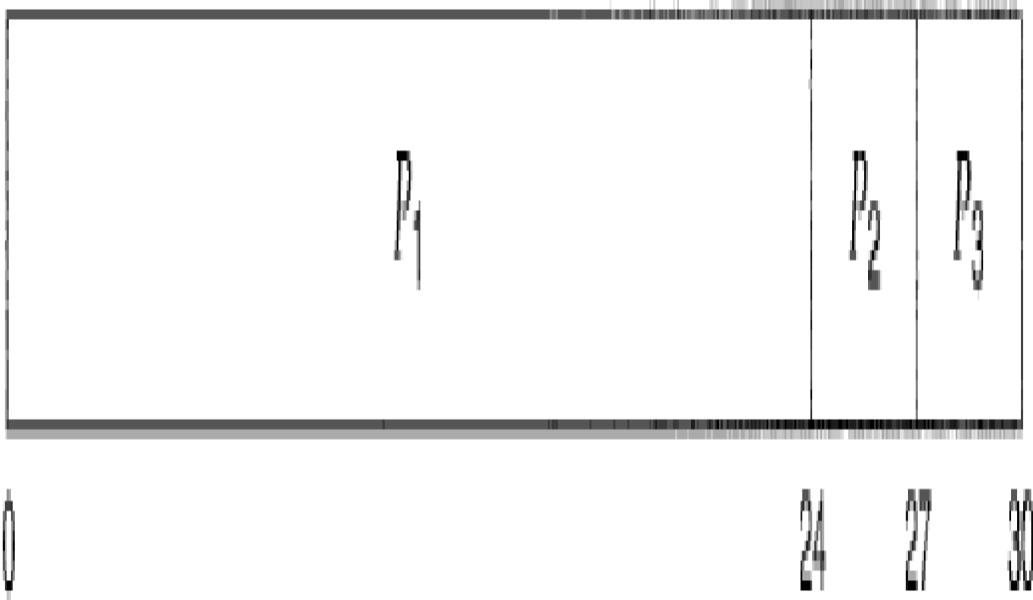
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



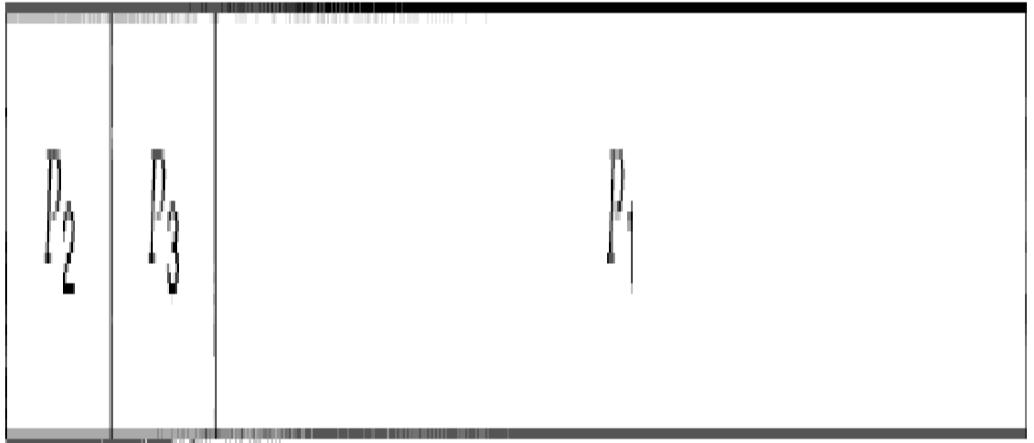
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



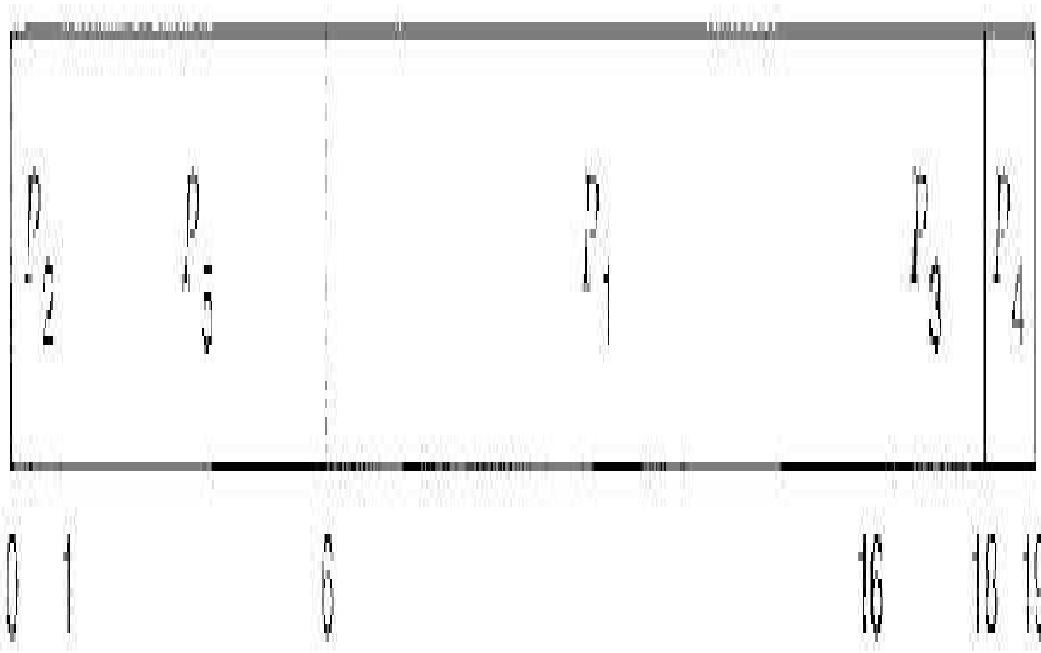
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.

Process	Burst Time	Arrival Time
P1	16	0
P2	5	1
P3	6	2
P4	1	3
P5	2	4

5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



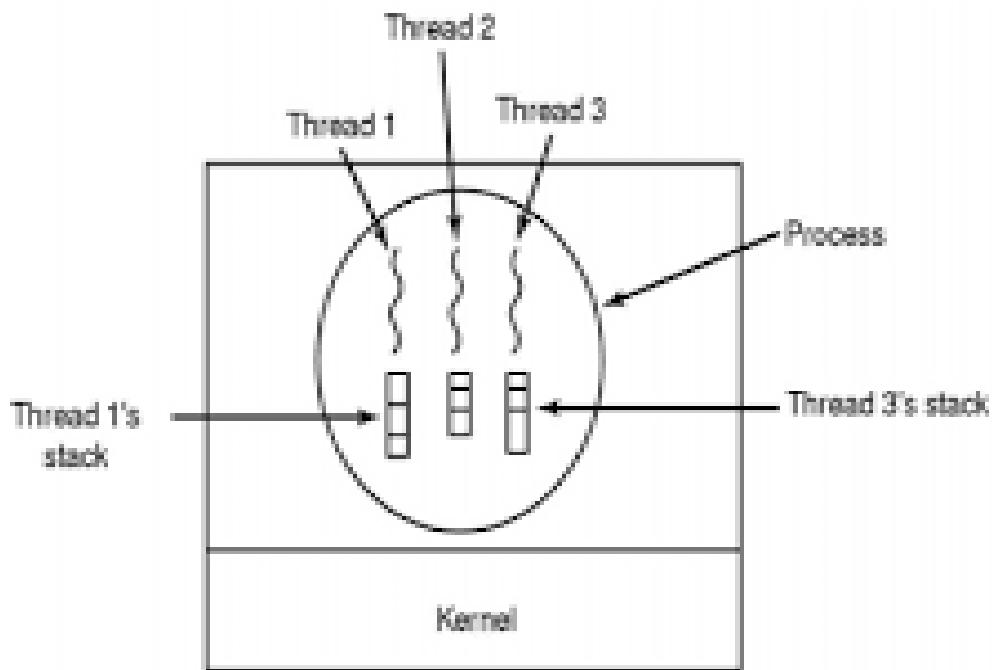
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.

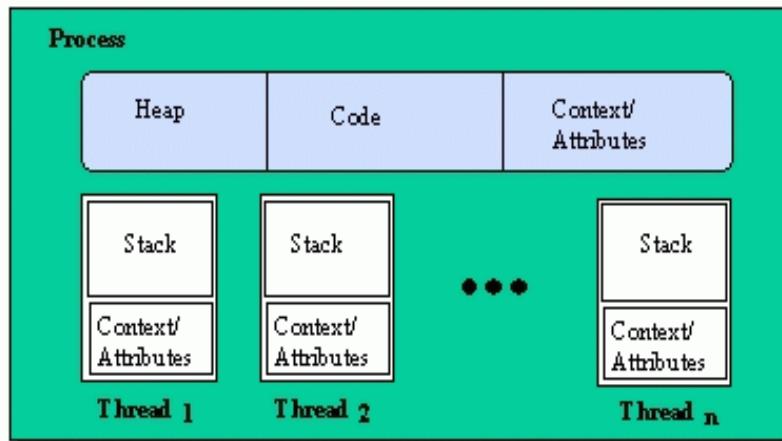


Each thread has its own stack.

5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.

Threads and Operating System Processes



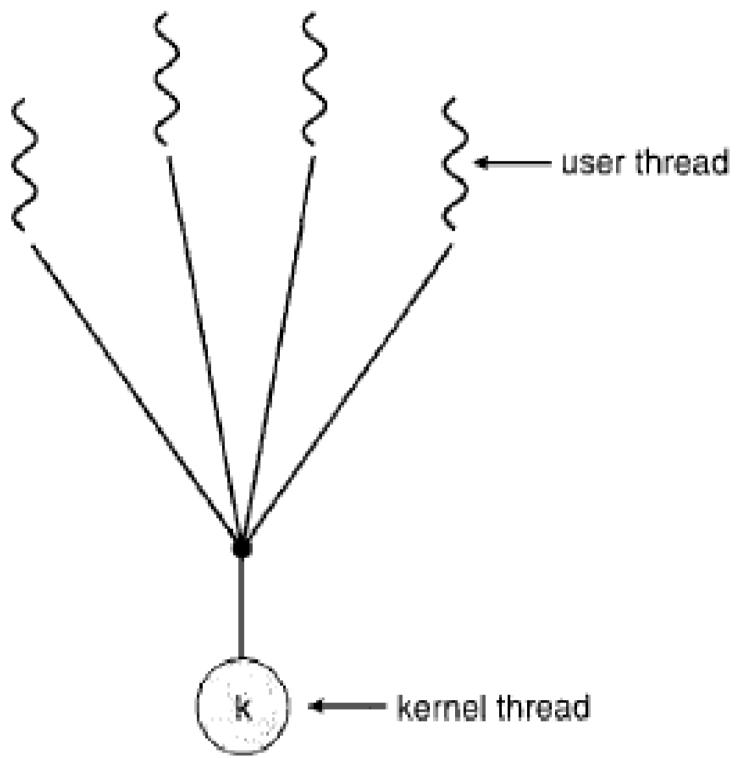
An Operating system process provides a protected address space.

Many threads may execute within the address space.

Each thread has its own stack & context (saved registers).

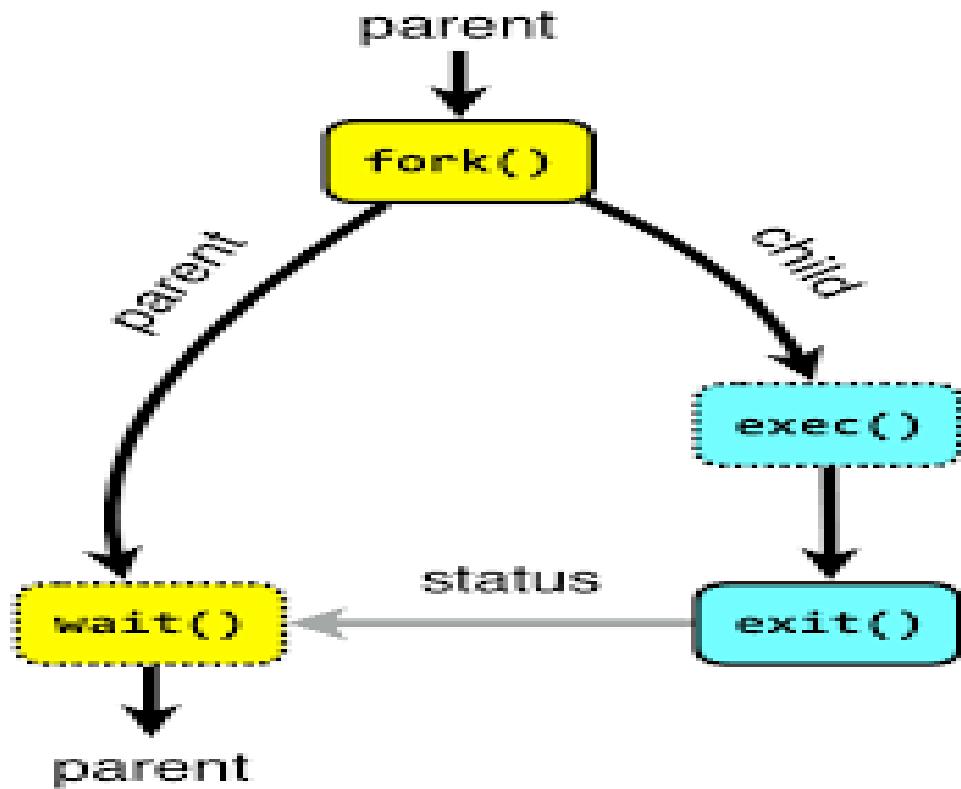
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



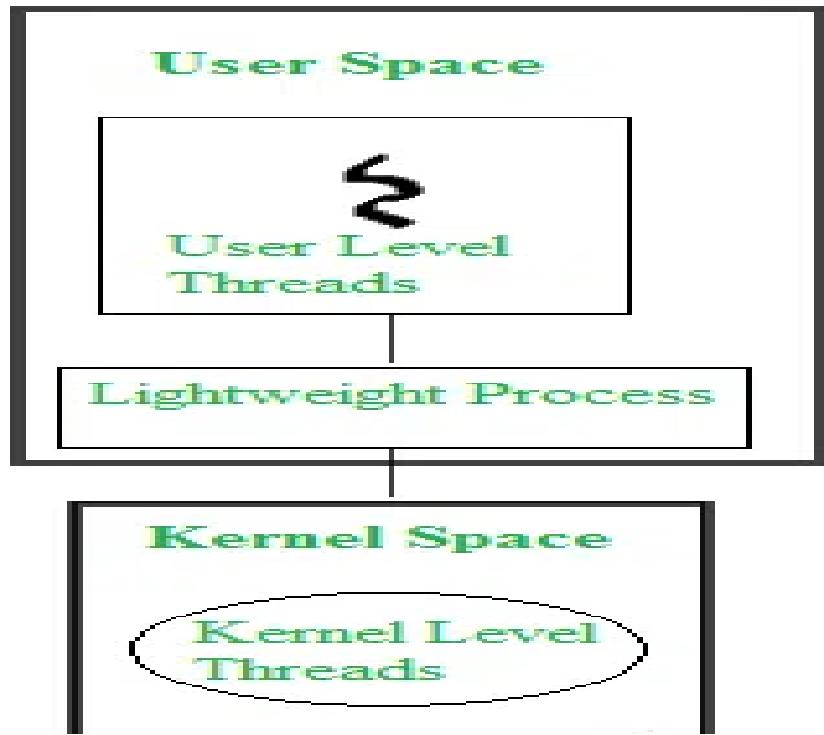
5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.

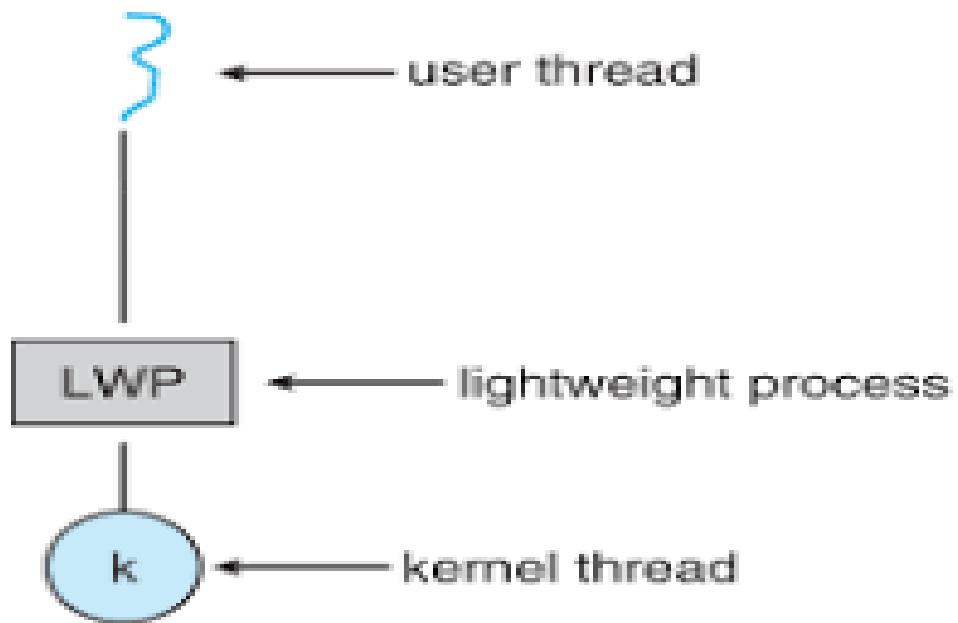


Figure 4.13 Lightweight process (LWP).

5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.

```
do {
```

```
    entry section
```

```
    critical section
```

```
    exit section
```

```
    remainder section
```

```
} while (TRUE);
```

5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.

```
do {
```

```
    flag[i] = TRUE;  
    turn = j;  
    while (flag[j] && turn == j);
```

critical section

```
    flag[i] = FALSE;
```

remainder section

```
} while (TRUE);
```

5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.

```
do {
```

```
    acquire lock
```

```
    critical section
```

```
    release lock
```

```
    remainder section
```

```
} while (TRUE);
```

5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.

P_0

P_1

wait(S);

wait(Q);

wait(Q);

wait(S);

.

.

.

.

.

signal(S);

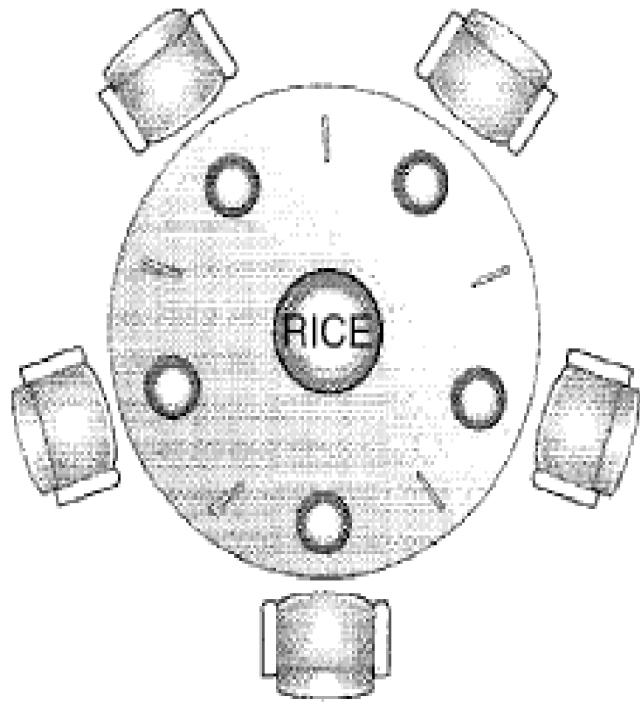
signal(Q);

signal(Q);

signal(S);

5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.



5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.

```

monitor dp
{
    enum {THINKING, HUNGRY, EATING}state[5];
    condition self[5];

    void pickup(int i) {
        state[i] = HUNGRY;
        test(i);
        if (state[i] != EATING)
            self[i].wait();
    }

    void putdown(int i) {
        state[i] = THINKING;
        test((i + 4) % 5);
        test((i + 1) % 5);
    }

    void test(int i) {
        if ((state[(i + 4) % 5] != EATING) &&
            (state[i] == HUNGRY) &&
            (state[(i + 1) % 5] != EATING)) {
            state[i] = EATING;
            self[i].signal();
        }
    }

    initialization_code() {
        for (int i = 0; i < 5; i++)
            state[i] = THINKING;
    }
}

```

5-Mark Explanation:

This diagram illustrates key operating system concepts from the course modules. It visually represents important architecture or mechanisms essential for understanding system operations.