Name:- Tagmeen Afroz Roll No:- 22P-9252

SECTION:- BAI-5A

SUBJECT:- Operating Systems

Assignment # 2.

Q1. What is preemptive multitasking?

Preemptive multitasking is a technique used by operating systems to manage multiple processes simultaneously. It allocates fixed time intervals, called time slices, to each process. When a time slice ends, the operating system switches to another process, ensuring that all tasks have a chance to run.

Q2) Write a C program using the fork() system call that generates the Fibonacci sequence ... child process.

```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/wait.h>

int fibonacci(int n) {
    if (n <= 1)
        return n;
    return fibonacci(n-1) + fibonacci(n-2);
}
void print_series(int n) {
    for (int i = 0; i < n; i++) {
        printf("%d", fibonacci(i));
    }
}
int main() {
    int n;
    pid_t pid;
    printf("Enter number");
    scanf("%d", &n);
    pid = fork();
```

Scanned with CamScanner

```
if (pid <0)
 { printf("Fork failed");
   return 1;
 }
 else if (pid == 0)
 {
   printf ("Child Process.");
   print_Series(n);
 }
 else
  {
   wait (NULL);
   printf("Child process finished. Parent exiting");
  }
 return 0;
}
```

Q3 - What is the main advantage ..... approach?

The microkernal approach offers a modular and secure operating system design. By minimizing kernal functions, it simplifies the system and reduces the risk of system-wide crashes. User programs and system services interact through message pasing, facilitated by the microkernel. However, the microkernal can introduce performance overhead due to frequent message pasing.

Q4- How sould a system be desgnd .... to do?

To allow a choice of operating systems at boot, a system uses a boot manager. This program presents a menu of options, allowing the user to select the desired operating system. Each OS is stored on a separate partition. The bootstrap program loads the boot manager from the Master Boot Record (MBR) or a dedicated partition. The boot manager then displays the menu and transfers control to the selected OS's loader.

Scanned with CamScanner

Q 5- When a process creates new process ... child process?

Ans Shared memory segments

Shared memory segments are explicitly created regions of memory that can be shared between multiple processes, allowing for efficient interprocess communication and data sharing -

Q 6- What are short, long and medium-term scheduling?

Ans

Short-Term Scheduling:

Also known as CPU scheduling, it selects processes from the ready queue in main memory.

It determines which process will be executed next by the CPU.

It occurs frequently, as processes are switched when events like clock ticks or I/O interrupts happen.

Focuses on immediate process execution and involves context switching.

Medium-Term Scheduling:

Manages processes that are in suspended or swapped-out state.

It reintroduces processes from secondary storage (eg disk) into the ready queue when enough memory is available.

Helps manage the degree of multiprogramming by temporarily swapping processes in and out of memory.

Long-Term Scheduling:

Controls which jobs or processes to admit into the system.

Also called job scheduling, it selects processes from secondary storage and loads them into memory.

It works at a lower frequency and deals with balancing I/O-bound and CPU-bound processes to ensure optimal resource use.

Scanned with CamScanner