Arunima Chaudhuri

M. Tech CSE - 1st Year

23CSM1R04

Assignment 2

Study the concept of Signals and write a program for Context Switching between two processes using alarm signals.

```c
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <signal.h>

volatile int switch_flag = 0;
// Signal handler for the alarm signal
void alarm_handler(int signum) {
    switch_flag = 1;
}
// Function to simulate process A
void process_A() {
    while (1) {
        printf("Process A is running\n");
        sleep(1);
        if (switch_flag) {
            switch_flag = 0;
            kill(getpid(), SIGSTOP); // Stop this process
        }
    }
}
// Function to simulate process B
void process_B() {
    while (1) {
        printf("Process B is running\n");
        sleep(1);
        if (switch_flag) {
            switch_flag = 0;
            kill(getpid(), SIGSTOP); // Stop this process
        }
    }
}
int main() {
    // Set up the alarm signal handler
    signal(SIGALRM, alarm_handler);
    // Create two child processes
    pid_t pid_A, pid_B;
    pid_A = fork();
```

```c
        if (pid_A < 0) {
            perror("Failed to create Process A");
            exit(1);
        } else if (pid_A == 0) {
            // This is Process A
            process_A();
        } else {
            pid_B = fork();

            if (pid_B < 0) {
                perror("Failed to create Process B");
                exit(1);
            } else if (pid_B == 0) {
                // This is Process B
                process_B();
            } else {
                // This is the parent process
                while (1) {
                    // Set an alarm to switch processes every 2 seconds
                    alarm(2);
                    pause(); // Wait for the alarm signal to be received
                }
            }
        }
    return 0;
}
```

Screenshot