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# EXERICSE-3

**Design a CPU scheduling program with C using First Come First Served technique with the following considerations.**
**a. All processes are activated at time 0.**
**b. Assume that no process waits on I/O devices To copy the content of one file to another using system calls in a C program.**

**Aim:**

To design a CPU scheduling program using the First Come First Served (FCFS) scheduling algorithm in C, considering that all processes are activated at time 0 and no process waits on I/O devices.

**Algorithm:**

1. Input the number of processes and their burst times.
2. Set the arrival time for all processes to 0.
3. Calculate the waiting time for each process:

- Waiting Time for the first process = 0.
- Waiting Time for process i = Waiting Time of process (i-1) + Burst Time of process (i-1).

4. Calculate the turnaround time for each process:
   - Turnaround Time = Waiting Time + Burst Time.
5. Compute the average waiting and turnaround times.
6. Display the process execution order, waiting times, turnaround times, and averages.

**Procedure:**

1. Read the burst times of all processes.
2. Implement FCFS scheduling by calculating waiting times and turnaround times sequentially.
3. Calculate averages for waiting and turnaround times.
4. Display the results.

**Code:**

```
#include <stdio.h>

int main() {

   int n, i;

   printf("Enter the number of processes: ");
```

```
    scanf("%d", &n);
    int burst_time[n], waiting_time[n], turnaround_time[n];
    float avg_waiting_time = 0, avg_turnaround_time = 0;
    printf("Enter the burst times of the processes:\n");
    for (i = 0; i < n; i++) {
        printf("Process %d: ", i + 1);
        scanf("%d", &burst_time[i]);
    }
    waiting_time[0] = 0;
    for (i = 1; i < n; i++) {
        waiting_time[i] = waiting_time[i - 1] + burst_time[i - 1];
    }
    for (i = 0; i < n; i++) {
        turnaround_time[i] = waiting_time[i] + burst_time[i];
        avg_waiting_time += waiting_time[i];
        avg_turnaround_time += turnaround_time[i];
    }
    avg_waiting_time /= n;
    avg_turnaround_time /= n;
    printf("\nProcess\tBurst Time\tWaiting Time\tTurnaround Time\n");
    for (i = 0; i < n; i++) {
        printf("%d\t%d\t\t%d\t\t%d\n", i + 1, burst_time[i], waiting_time[i], turnaround_time[i]);
    }
    printf("\nAverage Waiting Time: %.2f\n", avg_waiting_time);
    printf("Average Turnaround Time: %.2f\n", avg_turnaround_time);
    return 0;
}
```

**Result:**

The FCFS scheduling program calculates the waiting time and turnaround time for each process, displays the execution order, and computes the average waiting and turnaround times.

**Output:**

```
Enter the number of processes: 3
Enter the burst times of the processes:
Process 1: 5
Process 2: 8
Process 3: 12

Process Burst Time      Waiting Time    Turnaround Time
1       5               0               5
2       8               5               13
3       12              13              25

Average Waiting Time: 6.00
Average Turnaround Time: 14.33


...Program finished with exit code 0
Press ENTER to exit console.
```