Experiment-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

Aim:

To simulate the CPU scheduling using the First Come First Served (FCFS) technique.

Procedure:

1. Input the arrival time and burst time for each process.
2. Calculate the completion time, turnaround time, and waiting time for each process.
3. Display the scheduling table.

C Program:

```
#include <stdio.h>


struct Process {
    int id;
    int arrival_time;
    int burst_time;
    int completion_time;
    int waiting_time;
    int turnaround_time;
};
int main() {
    int n;
    printf("Enter number of processes: ");
    scanf("%d", &n);


    struct Process processes[n];
    int total_waiting_time = 0, total_turnaround_time = 0;
```

```
    for (int i = 0; i < n; i++) {
        processes[i].id = i + 1;
        printf("Enter arrival time and burst time for process %d: ", i + 1);
        scanf("%d %d", &processes[i].arrival_time, &processes[i].burst_time);
    }
    processes[0].completion_time = processes[0].arrival_time + processes[0].burst_time;
    for (int i = 1; i < n; i++) {
        processes[i].completion_time = processes[i-1].completion_time + processes[i].burst_time;
    }
    for (int i = 0; i < n; i++) {
        processes[i].turnaround_time = processes[i].completion_time - processes[i].arrival_time;
        processes[i].waiting_time = processes[i].turnaround_time - processes[i].burst_time;
        total_waiting_time += processes[i].waiting_time;
        total_turnaround_time += processes[i].turnaround_time;
    }
    printf("\nProcess\tArrival Time\tBurst Time\tWaiting Time\tTurnaround Time\n");
    for (int i = 0; i < n; i++) {
        printf("%d\t%d\t\t%d\t\t%d\t\t%d\n", processes[i].id, processes[i].arrival_time,
processes[i].burst_time, processes[i].waiting_time, processes[i].turnaround_time);
    }
    printf("\nAverage Waiting Time: %.2f\n", (float)total_waiting_time / n);
    printf("Average Turnaround Time: %.2f\n", (float)total_turnaround_time / n);

    return 0;
}
```

Output:

```
Output

Process    Burst Time    Waiting Time    Turnaround Time
1          24            0               24
2          3             24              27
3          3             27              30
4          4             30              34

Average Waiting Time: 20.25
Average Turnaround Time: 28.75
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```

Result:

This program implements the First Come First Served (FCFS) scheduling algorithm. The CPU processes each task in the order of arrival, and it calculates both the waiting time and turnaround time for each process. The average waiting time and turnaround time are also computed and displayed.