

```
#include <stdio.h>
```

```
void sortProcessesByPriority(int processes[], int bt[], int wt[], int tat[], int
ct[], int priority[], int n) {
    for (int i = 0; i < n - 1; i++) {
        for (int j = i + 1; j < n; j++) {
            if (priority[i] > priority[j]) {

                int temp = priority[i];
                priority[i] = priority[j];
                priority[j] = temp;

                temp = bt[i];
                bt[i] = bt[j];
                bt[j] = temp;

                temp = processes[i];
                processes[i] = processes[j];
                processes[j] = temp;
            }
        }
    }
}
```

```
void findWaitingTime(int processes[], int n, int bt[], int wt[]) {
    wt[0] = 0;
    for (int i = 1; i < n; i++) {
        wt[i] = bt[i - 1] + wt[i - 1];
    }
}
```

```
void findTurnAroundTime(int processes[], int n, int bt[], int wt[], int tat[]) {
    for (int i = 0; i < n; i++) {
        tat[i] = bt[i] + wt[i];
    }
}
```

```
void findCompletionTime(int processes[], int n, int bt[], int ct[]) {
    ct[0] = bt[0];
    for (int i = 1; i < n; i++) {
        ct[i] = ct[i - 1] + bt[i];
    }
}
```

```
void findAvgTime(int processes[], int n, int bt[], int priority[]) {
    int wt[n], tat[n], ct[n];
```

```
    sortProcessesByPriority(processes, bt, wt, tat, ct, priority, n);
```

```
    findWaitingTime(processes, n, bt, wt);
```

```
    findTurnAroundTime(processes, n, bt, wt, tat);
```

```

    findCompletionTime(processes, n, bt, ct);

    int total_wt = 0, total_tat = 0;

    printf("\nProcess\tBurst Time\tPriority\tWaiting Time\tTurnaround Time\t\n");
    for (int i = 0; i < n; i++) {
        total_wt += wt[i];
        total_tat += tat[i];
        printf("%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t", processes[i], bt[i],
priority[i], wt[i], tat[i], ct[i]);
    }
    printf("\nAverage Waiting Time: %.2f", (float)total_wt / n);
    printf("\nAverage Turnaround Time: %.2f\n", (float)total_tat / n);
}

```

```

void ganttChart(int processes[], int n, int bt[], int ct[]) {
    printf("\nGantt Chart:\n");
    for (int i = 0; i < n; i++) {
        printf("-----");
    }
    printf("\n");

    int current_time = 0;
    for (int i = 0; i < n; i++) {
        printf("| P%d ", processes[i]);
        current_time += bt[i];
    }
    printf("| \n");
    for (int i = 0; i < n; i++) {
        printf("-----");
    }
    printf("\n");
    current_time = 0;
    printf("0");
    for (int i = 0; i < n; i++) {
        current_time += bt[i];
        printf("      %d", current_time);
    }
    printf("\n");
}

```

```

int main() {
    int n;

    printf("Enter number of processes: ");
    scanf("%d", &n);

    int processes[n], burst_time[n], priority[n];

    for (int i = 0; i < n; i++) {
        processes[i] = i + 1;
    }

    printf("Enter burst times and priorities for each process:\n");
    for (int i = 0; i < n; i++) {
        printf("Burst time for P%d: ", processes[i]);
        scanf("%d", &burst_time[i]);

        printf("Priority for P%d: ", processes[i]);
        scanf("%d", &priority[i]);
    }
}

```

```

    findAvgTime(processes, n, burst_time, priority);

    ganttChart(processes, n, burst_time, burst_time);

    return 0;
}

```

```

student@dl-21:~/Atul/OS Record programs 6 7 8$ gcc priorityarray.c
student@dl-21:~/Atul/OS Record programs 6 7 8$ ./a.out
Enter number of processes: 4
Enter burst times and priorities for each process:
Burst time for P1: 4
Priority for P1: 1
Burst time for P2: 6
Priority for P2: 8
Burst time for P3: 5
Priority for P3: 4
Burst time for P4: 3
Priority for P4: 7

Process Burst Time      Priority      Waiting Time      Turnaround Time      Completion Time
1         4              1             0                 4                   4
3         5              4             4                 9                   9
4         3              7             9                12                  12
2         6              8            12                18                  18

Average Waiting Time: 6.25
Average Turnaround Time: 10.75

Gantt Chart:
-----
| P1 | P3 | P4 | P2 |
-----
0     4     9    12    18

```