

```

#include <stdio.h>
#include <stdlib.h>
#include <string.h>

typedef struct process_info
{
    char pname[20];
    int at, bt, ct, bt1;
    struct process_info *next;
} NODE;

struct gantt_chart
{
    int start, end;
    char pname[30];
} s[100], s1[100];

int n, k, time;
NODE *first, *last;

void accept_info()
{
    NODE *p;

    printf("Enter no of process : ");
    scanf("%d", &n);
    printf("\nPNAME\tATIME\tCPUB\n");

    for (int i = 0; i < n; i++)
    {
        p = (NODE *)malloc(sizeof(NODE));

        scanf("%s%d%d", p->pname, &p->at, &p->bt);

        p->bt1 = p->bt;
        p->next = NULL;

        if (first == NULL)
            first = p;
        else
            last->next = p;

        last = p;
    }
}

void print_output()
{
    NODE *p = first;
    float avg_tat = 0, avg_wt = 0;

```

```

printf("\npname\tat\tbt\tct\ttat\twt\n");

while (p != NULL)
{
    int tat = p->ct - p->at;
    int wt = tat - p->bt;

    avg_tat += tat;
    avg_wt += wt;

    printf("%s\t%d\t%d\t%d\t%d\t%d\n", p->pname, p->at, p->bt, p->ct,
tat, wt);

    p = p->next;
}

printf("\nAvg TAT=%.2f\nAvg WT=%.2f\n\n", (avg_tat / n), (avg_wt / n));
}

NODE *get_sjf()
{
    NODE *p = first, *min_p = NULL;
    int min = 9999;

    while (p != NULL)
    {
        if (p->at <= time && p->bt1 != 0 && p->bt1 < min)
        {
            min = p->bt1;
            min_p = p;
        }
        p = p->next;
    }
    return min_p;
}

void sjfnp()
{
    int prev = 0, n1 = 0;
    NODE *p;

    while (n1 != n)
    {
        p = get_sjf();

        if (p == NULL)
        {
            time++;
            s[k].start = prev;

```

```

        strcpy(s[k].pname, "*");
        s[k].end = time;

        prev = time;
        k++;
    }
    else
    {
        time += p->bt1;
        s[k].start = prev;
        strcpy(s[k].pname, p->pname);
        s[k].end = time;

        prev = time;
        k++;

        p->ct = time;
        p->bt1 = 0;
        n1++;
    }
}
}

```

```

void print_gantt_chart()
{
    int i, j, m;

    s1[0] = s[0];

    for (i = 1, j = 0; i < k; i++)
    {
        if (strcmp(s1[j].pname, s[i].pname) == 0)
            s1[j].end = s[i].end;
        else
            s1[++j] = s[i];
    }

    printf("%d", s1[0].start);

    for (i = 0; i <= j; i++)
    {
        m = (s1[i].end - s1[i].start);

        for (k = 0; k < m / 2; k++)
            printf("-");

        printf("%s", s1[i].pname);

        for (k = 0; k < (m + 1) / 2; k++)
            printf("-");
    }
}

```

```
                printf("%d", s1[i].end);
            }
    }

int main()
{
    accept_info();
    sjfnp();
    print_output();
    print_gantt_chart();
    return 0;
}
```