Question :

Write a program to implement the shortest job first non-preemptive scheduling algorithm and find the average turnaround time, waiting time, completion time and response time for overall process. Also Print Gantt chart for it.

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Code :

```
#include<stdio.h>
int main()
{
    int n;
printf(" -------Shortest Job First Scheduling ( NP )-------\n");
printf("\nEnter the No. of processes :");
scanf("%d",&n);
int bt[n],temp,i,j,at[n],wt[n],ct[n],ta[n],pid[n],f[n];
int st=0,tot=0;
float avgwt=0,avgta=0;
for(i=0;i<n;i++)
{
printf("Enter the arrival time of %d process :",i+1);
scanf(" %d",&at[i]);
printf("Enter the burst time of %d process :",i+1);
scanf(" %d",&bt[i]);
pid[i]=i+1;
f[i]=0;
}
while(1)
        {
            int c=n, min = 999999;

            if (tot == n)
                break;

            for (i=0; i<n; i++)
            {

                if ((at[i] <= st) && (f[i] == 0) && (bt[i]<min))
                {
                    min=bt[i];
                    c=i;
                }
            }
            if (c==n)
                st++;
            else
            {
                ct[c]=st+bt[c];
                st+=bt[c];
                ta[c]=ct[c]-at[c];
                wt[c]=ta[c]-bt[c];
```

```
                f[c]=1;
                pid[tot] = c + 1;
                tot++;
            }
        }
    for(i=0;i<n;i++)
    {
        avgwt+= wt[i];
        avgta+= ta[i];
    }
printf("************************");
printf("\nProcess       Burst         Arrival        Completion         Waiting
Turn-around" );
for(i=0;i<n;i++)
{
printf("\np%d\t\t%d\t\t%d\t\t%d\t\t%d\t\t%d",pid[i],bt[i],at[i],ct[i],wt[i],ta[i]);
}

printf("\n\nAVERAGE WAITING TIME : %f",(avgwt/n));
printf("\nAVERAGE TURN AROUND TIME : %f",(avgta/n));
return 0;
}
```

Output :

```
-------Shortest Job First Scheduling ( NP )-------

Enter the No. of processes :5
Enter the arrival time of 1 process :6
Enter the burst time of 1 process :4
Enter the arrival time of 2 process :5
Enter the burst time of 2 process :1
Enter the arrival time of 3 process :3
Enter the burst time of 3 process :6
Enter the arrival time of 4 process :4
Enter the burst time of 4 process :7
Enter the arrival time of 5 process :3
Enter the burst time of 5 process :4
************************
Process       Burst         Arrival        Completion         Waiting          Turn-
around
p5              4               6               12              2               6
p2              1               5               8               2               3
p1              6               3               18              9               15
p3              7               4               25              14              21
p4              4               3               7               0               4

AVERAGE WAITING TIME : 5.400000
AVERAGE TURN AROUND TIME : 9.800000%
```