#include<stdio.h>

#include<stdlib.h>

int main()

{ printf(" Shortest Job Next With Priority\n");

printf(" Priority=1+Waiting Time/Estimated Runtime\n");

int nop,wtotal,i,j,temp,btime=0,min,k=1,m=1,sum=0,wsum=0,pri=0,r=0;

printf("Enter total number of process...");

scanf("%d",&nop);

int b\_time[nop],a\_time[nop],process[nop],tat[nop],avg\_wt;

float pop[nop],w\_time[nop],pr[nop],max;

for(i=0;i<nop;i++)

{

process[i]=i+1;

}

for(i=0;i<nop;i++)

{

printf("\nEnter burst time of process p%d :",i+1);

scanf("%d",&b\_time[i]);

}

for(i=0;i<nop;i++)

{

printf("Enter Arrival time of process p%d :",i+1);

scanf("%d",&a\_time[i]);

}

printf("\n\n-----------Before Execution----------------\n");

printf("\nProcess\tArrival Time\tBurst Time");

for(i=0;i<nop;i++)

{

printf("\np%d\t\t%d\t\t%d",i+1,a\_time[i],b\_time[i]);

}

for(i=0;i<nop;i++)

{

for(j=0;j<nop;j++)

{

if(a\_time[i]<a\_time[j])

{

temp=process[j];

process[j]=process[i];

process[i]=temp;

temp=a\_time[j];

a\_time[j]=a\_time[i];

a\_time[i]=temp;

temp=b\_time[j];

b\_time[j]=b\_time[i];

b\_time[i]=temp;

}

}

}

//Sorting arrival time.

for(i=0;i<nop;i++)

{

for(j=i+1;j<nop;j++)

{

if(a\_time[i]==a\_time[j]&&b\_time[i]>b\_time[j])

{

temp=process[j];

process[j]=process[i];

process[i]=temp;

temp=a\_time[j];

a\_time[j]=a\_time[i];

a\_time[i]=temp;

temp=b\_time[j];

b\_time[j]=b\_time[i];

b\_time[i]=temp;

}

}

}

for(int i=0;i<nop;i++)

{

pop[i]=1;

w\_time[i]=0;

}

for(j=0;j<nop;j++)

{

btime=btime+b\_time[j];

min=b\_time[k];

for(i=k;i<nop;i++)

{

if(pop[i]==max)

{

if (btime>=a\_time[i] && b\_time[i]<min)

{

temp=process[k];

process[k]=process[i];

process[i]=temp;

temp=a\_time[k];

a\_time[k]=a\_time[i];

a\_time[i]=temp;

temp=b\_time[k];

b\_time[k]=b\_time[i];

b\_time[i]=temp;

temp=pop[k];

pop[k]=pop[i];

pop[i]=temp;

}

}

}

for(int b=0;b<=j;b++)

{

sum+=b\_time[b];

}

for(int a=m;a<nop;a++)

{

w\_time[a]=sum-a\_time[a];

sum=sum+b\_time[a];

if(w\_time[a]<0)

{

w\_time[a]=0;

}

}

for(int c=m;c<nop;c++)

{

pop[c]=1+ (w\_time[c]/b\_time[c]);

}

m++;

sum=0;

k++;

}

for(i=0;i<nop;i++)

{

tat[i]=b\_time[i]+w\_time[i]; //calculation of turnaround time

}

printf("\n\n\n-----------After Execution----------------\n");

printf("\nProcess\tArrival Time\tBurst Time\tProirity\tWaiting time\tTurn Around Time");

for(i=0;i<nop;i++)

{

wtotal+=w\_time[i];

printf("\np%d\t\t%d\t\t%d\t%.2f\t\t%.2f\t\t%d",process[i],a\_time[i],b\_time[i],pop[i],w\_time[i],tat[i]);

}

avg\_wt=(float)wtotal/nop;

printf("\nAverage Waiting Time:%.2f",avg\_wt);

return 0;

}