#include<stdio.h>

#include<stdlib.h>

struct process{

int name;

float bt;

float at;

float status;

float wt;

float tat;

};

void display(struct process proc[],int num){

int i;

printf("The input process details are as shown below\n");

printf("Process\tBurst-time\tArrival-time\n");

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

printf("p%d\t%f\t%f\n",proc[i].name,proc[i].bt,proc[i].at);

}

printf("\n");

}

void sort(struct process proc[],int num){

int i,j;

struct process temp;

for(i=0;i<num-1;i++)

{

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

{

if(proc[i].at>proc[j].at){

temp=proc[i];

proc[i]=proc[j];

proc[j]=temp;

}

}

}

}

void schedule(struct process proc[],int num,int sum){

int i,j;

float f,avgWaitingTime=0,avgtat=0;

sort(proc,num);

printf("\nProcess\tBurst Time\tArrival Time\tWaiting Time\tTurn-Around Time\n");

for(f=proc[0].at;f<(float)sum;){

float pr=-9999;

int nxt;

float temp;

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

if(proc[i].at<=f && proc[i].status!=1){

temp=(proc[i].bt + (f - proc[i].at)) / proc[i].bt;

if(pr<temp){

pr=temp;

nxt=i;

}

}

}

f=proc[nxt].bt+f;

proc[nxt].wt=f-(proc[nxt].at)-(proc[nxt].bt);

proc[nxt].tat=f-proc[nxt].at;

avgWaitingTime+=proc[nxt].wt;

avgtat+=proc[nxt].tat;

proc[nxt].status=1;

printf("p%d\t%f\t%f",proc[nxt].name,proc[nxt].bt,proc[nxt].at);

printf("\t%f\t%f\n",proc[nxt].wt,proc[nxt].tat);

}

printf("Average waiting time=%f\n",avgWaitingTime/num);

printf("Average turn-around time=%f\n",avgtat/num);

}

int main(){

int i;

float arrival,burst,sum=0;

static int num;

struct process proc[10];

printf("Enter the number of process:");

scanf("%d",&num);

printf("\nNow, enter the data for the %d processes:\n",num);

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

proc[i].name=i+1;

printf("Process p%d\n",proc[i].name);

printf("Burst time:");

scanf("%f",&burst);

proc[i].bt=burst;

printf("Arrival time:");

scanf("%f",&arrival);

proc[i].at=arrival;

proc[i].status=0;

sum+=proc[i].bt;

printf("\n");

}

display(proc,num);

sort(proc,num);

schedule(proc,num,sum);

}