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/*
 * round.c
 *
 *  Created on:
 *      Author: root
 */
#include<stdio.h>
#include<string.h>
struct process
{
	char pname[10];
	int AT,BT,ST,FT,TT,WT,BT1;
}p[15];
struct process t;
int i,n,j,k,bt,tq;
char GC[150];
void get_data()
{
	printf("Enter number of processes : ");
	scanf("%d",&n);
	printf("Enter process details for %d processes  ",n);
	for(i=0;i<n;i++)
	{
		printf("\nEnter Process name,arival time,cpu burst time : ");
		scanf("%s   %d     %d",&p[i].pname,&p[i].AT,&p[i].BT);
		p[i].BT1=p[i].BT;
	}
	printf("\nEnter the time quantum : ");
	scanf("%d",&tq);
}
void put_data()
```

```
{
        printf("Processes are as below");
        printf("\nProcess name\t arival time\t cpu burst time");
        for(i=0;i<n;i++)
        {
                printf("\n%s\t\t%d\t\t%d",p[i].pname,p[i].AT,p[i].BT1);
        }
}
void arrivalsort()
{
        //struct process t;
        for(i=0;i<n;i++)
        {
                for(j=i+1;j<n;j++)
                {
                  if(p[i].AT > p[j].AT)
                  {
                        t=p[i];
                        p[i]=p[j];
                        p[j]=t;
                  }//if
                }//for
        }//for
}//arrivalsort

void avgTTWT()
{
        float sumtt=0,sumwt=0;
        for(i=0;i<n;i++)
        {
                p[i].TT=p[i].FT-p[i].AT;
                p[i].WT=p[i].TT-p[i].BT1;
                sumtt=sumtt+p[i].TT;
                sumwt=sumwt+p[i].WT;
        }//for
        printf("\n Process\tAT\tBT\tTT\tWT\n");
        for(i=0;i<n;i++)
                {
      printf("\n%s\t\t%d\t%d\t%d\t%d",p[i].pname,p[i].AT,p[i].BT,p[i].TT,p[i].WT);
                }

                        printf("\nAverage turn around time=%f/%d = %f",sumtt,n, sumtt/n);
                        printf("\nAverage wait time=%f/%d = %f",sumwt,n, sumwt/n);
        }//avgTTWT

void rr()
{
        char str[5];
        i=0;
        int time=0;
                strcpy(GC,"0");
                aaa:
                for(i=0;i<n;i++)
                {
                        if(p[i].BT!=0)
                        {
                                strcat(GC,"|");
                                if(p[i].AT>time)
                                {
                                strcat(GC,"CPUIDLE");
                                time=p[i].AT;
                                sprintf(str,"%d",time);
                                strcat(GC,str);
                                strcat(GC,"|");
                                }
                                p[i].ST=time;
                                strcat(GC,p[i].pname);
                                if(p[i].BT < tq)
                                        bt=p[i].BT;
                                else
                                        bt=tq;
                                p[i].BT=p[i].BT-bt;
                                k=0;
                                while(bt!=0)
                                {
                                        strcat(GC," ");
                                        k++;
                                        bt--;
                                }//while
                                time=time+k;
                     sprintf(str,"%d",time);
                                strcat(GC,str);
                                p[i].FT=time;


                        }//if
                }//for




                for(i=0;i<n;i++)
                {
                        if(p[i].BT!=0)
                                goto aaa;
                }
                        printf("\nGantt Chart\n");
                        puts(GC);
                        avgTTWT();


}//rr

int main()
{
        get_data();
        put_data();
    arrivalsort();
    put_data();
    rr();
}

/*
Enter number of processes : 3
Enter process details for 3 processes
Enter Process name,arival time,cpu burst time : p1 0 5


Enter Process name,arival time,cpu burst time : p2 2 2


Enter Process name,arival time,cpu burst time : p3 1 7


Enter the time quantum : 2
Processes are as below
Process name    arival time       cpu burst time
p1                0                 5
p2                2                 2
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p3                  1                   7Processes are as below
Process name     arival time         cpu burst time
p1                  0                   5
p3                  1                   7
p2                  2                   2
Gantt Chart
0|p1  2|p3  4|p2  6|p1  8|p3  10|p1 11|p3  13|p3 14

 Process            AT        BT        TT        WT


p1                  0         0         11        6
p3                  1         0         13        6
p2                  2         0         4         2
Average turn around time=28.000000/3 = 9.333333
Average wait time=14.000000/3 = 4.666667 */
```