

PROGRAM – 7

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#include<stdio.h>
struct process
{
    int id,WT,AT,BT,TAT,PR,CT,RT;
};
struct process a[10];

void sortart(struct process a[],int n)
{
    int i,j;
    struct process temp;
    for(i=0;i<n;i++)
    {
        for(j=i+1;j<n;j++)
        {
            if(a[i].AT > a[j].AT)
            {
                temp = a[i];
                a[i] = a[j];
                a[j] = temp;
            }
        }
    }
    return;
}

int main()
{
    int n,check_ar=0,i,j,sum,k,l,minp,m,n1=0,n2=0;//with no two
process with same priority
    int Cmp_time=0;
    float Avg_WT=0,Avg_TAT=0,Avg_RT=0;
    struct process p[10];
    struct process pro[100];
    struct process temp[10];
    printf("Enter the number of process \n");
    scanf("%d",&n);
    printf("Enter the Arrival time , Burst time and priority of the
process\n");
    printf("AT\tBT\tPR\n");
    for(int i=0;i<n;i++)
    {
        scanf("%d%d%d",&a[i].AT,&a[i].BT,&a[i].PR);
        a[i].id=i+1;
        n2=n2+a[i].BT;
        temp[i]=a[i];
    }
    sortart(a,n);
    sum=0;
    for(i=0;i<n2+a[i].AT;i++)
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{
    k=0;
    for(j=0;j<n;j++)
    {
        if(sum>=a[j].AT && a[j].BT>0)
        {
            p[k]=a[j];
            k++;
        }
    }
    minp=p[0].PR;
    for(l=0;l<k;l++)
    {
        if(minp>p[l].PR)
        {
            minp=p[l].PR;
        }
    }
    for(m=0;m<n;m++)
    {
        if(a[m].PR==minp)
        {
            a[m].BT=a[m].BT-1;
            pro[n1].id=a[m].id;
            if(n1==0)
            {
                pro[n1].CT=i+1;
                n1++;
            }
            else
            {
                if(pro[n1].id==pro[n1-1].id)
                {
                    pro[n1-1].CT=i+1;
                }
                else
                {
                    pro[n1].CT=i+1;
                    n1++;
                }
            }
        }
    }
    sum++;
}
printf("gantt chart :\n\n%d ",a[0].AT);
for(i=0;i<n1;i++)
{
    printf(" p%d %d | ",pro[i].id,pro[i].CT);
}
for(i=0;i<n1;i++)
{
    for(j=0;j<n;j++)
    {

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        if(temp[j].id==pro[i].id)
        {
            temp[j].CT=pro[i].CT;
        }
    }
    printf("\n\nProcess\tArrival\tComplete\tTAT\tWaiting\n");
    for(i=0;i<n;i++)
    {
printf("p%d\t%d\t%d\t%d\t%d\n",temp[i].id,temp[i].AT,temp[i].CT,temp
[i].CT-temp[i].AT,temp[i].CT-temp[i].BT-temp[i].AT);
    }
    for(i=0;i<n;i++)
    {
        Avg_WT=Avg_WT+temp[i].CT-temp[i].BT-temp[i].AT;
        Avg_TAT=Avg_TAT+temp[i].CT-temp[i].AT;
    }
    printf("AVERAGE TURN AROUND TIME : %.2f\n",Avg_TAT/n);
    printf("AVERAGE WAITING TIME IS : %.2f\n",Avg_WT/n);
}

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