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//=====
// Name      : Greedy.cpp
// Author    :
// Version   :
// Copyright  : Your copyright notice
// Description : Hello World in C++, Ansi-style
//=====

#include <iostream>
using namespace std;

class JOB
{
    string job;
    int dead,profit;
public:
    JOB()
    {
        job=" ";dead=profit=0;
    }
    friend class GREEDY_SEQUENCE;
};

class GREEDY_SEQUENCE
{
    JOB J[10];
    string sequence[11];
    int n;
public:
    void Init()
    {
        n=0;
        for(int i=0;i<10;i++)
        {
            sequence[i]=J[i].job=" "; J[i].dead=J[i].profit=0;
        }
    }
    void accept_jobs();
    void sort_jobs();
    void job_sequence();
};

void GREEDY_SEQUENCE::accept_jobs()
{
    cout<<"\n Enter the no of jobs(max.10)=>";
    cin>>n;
    for(int i=0;i<n;i++)
    {
        cout<<"\n Enter the job name, deadline and profit=>";
        cin>>J[i].job>>J[i].dead>>J[i].profit;
    }

    cout<<"\n -----";
    cout<<"\n  JOBS      Deadlines      Profit  ";
    cout<<"\n -----";
    for(int i=0;i<n;i++)
    {
        cout<<"\n      "<<J[i].job<<"          "<<J[i].dead<<"          "<<J[i].profit;
    }
}
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    }
    cout<<"\n -----";
}

void GREEDY_SEQUENCE::sort_jobs()
{
    JOB temp;
    for(int i=1;i<=n;i++)
    {
        for(int j=0;j<(n-i);j++)
        {
            if(J[j].profit<J[j+1].profit)
            {
                temp=J[j];
                J[j]=J[j+1];
                J[j+1]=temp;
            }
        }
    }
}

void GREEDY_SEQUENCE::job_sequence()
{
    int dmax=0,empty=0,k,profit=0;
    sort_jobs();
    cout<<"\n Jobs sorted according decreasing profits=>";
    cout<<"\n -----";
    cout<<"\n JOBS      Deadlines      Profit  ";
    cout<<"\n -----";
    for(int i=0;i<n;i++)
    {
        cout<<"\n      "<<J[i].job<<"      "<<J[i].dead<<"      "<<J[i].profit;
    }
    cout<<"\n -----";

    for(int i=0;i<n;i++)
    {
        if(J[i].dead>dmax)
            dmax=J[i].dead;
    }
    empty=dmax;

    for(int i=0;i<n && empty>0;i++)
    {
        k=J[i].dead;
        while(k>0)
        {
            if(sequence[k]==" ")
            {
                sequence[k]=J[i].job;
                empty--;
                profit=profit+J[i].profit;
                break;
            }
            else
                k--;
        }
    }
}

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    }

    int TWT=0;
    cout<<"\n The GREEDY job sequence=>";
    for(int i=1;i<=dmax;i++)
    {
        TWT=TWT+i-1;
        cout<<" "<<sequence[i];
    }

    cout<<"\n TOTAL PROFIT=>"<<profit;
    cout<<"\n TOTAL TIME SPENT BY ALL JOBS=>"<<dmax+TWT;
}

int main()
{
    GREEDY_SEQUENCE S;
    int ch;
    do
    {
        cout<<"\n ----- MENU -----";
        cout<<"\n 1.ACCEPT JOBS                ";
        cout<<"\n 2.GREEDY JOB SEQUENCE                ";
        cout<<"\n 3.EXIT                ";
        cout<<"\n -----";
        cout<<"\n Enter your choice=>";
        cin>>ch;
        switch(ch)
        {
            case 1:
                S.Init();
                S.accept_jobs();
                break;
            case 2:
                S.job_sequence();
                break;
            case 3:
                cout<<"\n Exiting from Program.....!";
                break;
            default:
                cout<<"\n Enter the correct choice.....!";
        }

        }while(ch!=3);
    return 0;
}

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