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public class StriverGreedy {
    //*****N meetings in a room*****8 */
    class meeting{
        int start;
        int end;
        int pos;

        meeting(int s,int e,int p){
            this.start=s;
            this.end=e;
            this.pos=p;
        }
    }
    class meetingComparator implements Comparator<meeting>
    {
        @Override
        public int compare(meeting o1,meeting o2)
        {
            if(o1.end<o2.end)
                return -1;
            else if(o1.end>o2.end)
                return 1;
            else if(o1.pos<o2.pos)
                return -1;
            return 1;
        }
    }
    class Solution
    {
        public static int maxMeetings(int start[], int end[], int n)
        {
            // add your code here
            ArrayList<meeting> meet=new ArrayList<>();
            for(int i=0;i<n;i++){
                meet.add(new meeting(start[i],end[i],i+1));
            }
            meetingComparator mc=new meetingComparator();
            Collections.sort(meet,mc);
            ArrayList<Integer> ans=new ArrayList<>();
            ans.add(meet.get(0).pos);
            int limit=meet.get(0).end;
            for(int i=1;i<n;i++){
                if(meet.get(i).start>limit){
                    limit=meet.get(i).end;
                    ans.add(meet.get(i).pos);
                }
            }
            return ans.size();
        }
    }
}

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}

//*****Minimum number of platforms required for a Railway*****/
class Solution
{
//Function to find the minimum number of platforms required at the
//railway station such that no train waits.
static int findPlatform(int arr[], int dep[], int n)
{
    // add your code here
    Arrays.sort(arr);
    Arrays.sort(dep);
    int plat=1,res=1;
    int i=1,j=0;
    while(i<n && j<n){
        if(arr[i]<=dep[j]){
            plat++;
            i++;
        }
        else if(arr[i]>dep[j]){
            plat--;
            j++;
        }
        if(res<plat){
            res=plat;
        }
    }
    return res;
}
}

//*****Job Scheduling***** */
class Solution
{
//Function to find the maximum profit and the number of jobs done.
int[] JobScheduling(Job arr[], int n)
{
    // Your code here
    Arrays.sort(arr,(a,b)->(b.profit-a.profit));
    int maxi=0;
    for(int i=0;i<n;i++){
        maxi=Math.max(maxi,arr[i].deadline);
    }
    int result[]=new int[maxi+1];
    for(int j=0;j<maxi+1;j++){
        result[j]=-1;
    }
    int profit=0;
    int countJobs=0;
    for(int k=0;k<n;k++){

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        for(int m=arr[k].deadline;m>=1;m--){
            if(result[m]==-1){
                result[m]=k;
                countJobs++;
                profit+=arr[k].profit;
                break;
            }
        }
    }
    int fin[]={countJobs,profit};
    return fin;
}
}

//*****Fractional KnapSack***** */
class itemComparator implements Comparator<Item>{
    @Override
    public int compare(Item a,Item b){
        double r1=(double)a.value/(double)a.weight;
        double r2=(double)b.value/(double)b.weight;
        if(r1<r2){
            return 1;
        }
        else if(r1>r2){
            return -1;
        }
        else return 0;
    }
}

class Solution
{
    //Function to get the maximum total value in the knapsack.
    double fractionalKnapsack(int W, Item arr[], int n)
    {
        // Your code here
        Arrays.sort(arr,new itemComparator());
        int currWeight=0;
        double maxProfit=0.0;
        for(int i=0;i<n;i++){
            if(currWeight+arr[i].weight<=W){
                currWeight+=arr[i].weight;
                maxProfit+=arr[i].value;
            }
            else{
                int remain=W-currWeight;
                maxProfit+=((double)arr[i].value/(double)arr[i].weight)*(double)remain;
                break;
            }
        }
        return maxProfit;
    }
}

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    }
}
//*****Minimum Number of Coins***** */
public class Solution
{
    public static int findMinimumCoins(int V)
    {
        // Write your code here.
        ArrayList<Integer> ans=new ArrayList<>();
        int coins[]={1,2,5,10,20,50,100,500,1000};
        int n = coins.length;
        for (int i=n-1;i>=0;i--){
            while(V>=coins[i]) {
                V-=coins[i];
                ans.add(coins[i]);
            }
        }
        return ans.size();
    }
}

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