RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Wednesday,6August2025,10:16PM
State	Finished
Completedon	Wednesday,6August2025,10:29 PM
Timetaken	12mins58secs
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

Convert the following algorithm into a program and find its time complexity using the counter method.

```
void function (int n)
{
    inti=1;
```

```
    ints=1;
```

```
    while(s<=n)
    {
         i++;
         s+=i;
     }
}
```

Note: Noneedofcounterincrementfordeclarationsandscanf()andcountvariableprintf()statements.

Input:

ApositiveIntegern

Output:

Printthevalueofthecountervariable

Forexample:

Input	Result
9	12

Answer: (penaltyregime:0%)

```
#include<stdio.h>

voidfunction(intn)
{
    intcount=0;
    //count++;
    inti=1;
    count++;
    ints=1;
    count++;

    while(s<=n){
        count++;
        i++;
        count++;
        s+=i;
        count++;
    }
    count++;

    printf("%d",count);
}

intmain()
{
    intnum;
    scanf("%d",&num);
    function(num);
}
```

	Input	Expected	Got	
✔	9	12	12	✔

	Input	Expected	Got	
✔	4	9	9	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

For input **n = 9**, the output (counter value) is **12**.
Hence, the **time complexity** of the algorithm is **O(n)**.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Thursday,7August2025,10:12AM
State	Finished
Completedon	Thursday,7August2025,10:31AM
Timetaken	18mins48secs
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

Convert the following algorithm into a program and find its time complexity using the counter method.

```
void func(int n)
{
    if(n==1)
    {
      printf("*");
    }
    else
    {
     for(inti=1;i<=n;i++)
     {
       for(intj=1;j<=n;j++)
       {
          printf("*");
          printf("*");
          break;
       }
     }
   }
 }
```

Note: Noneedofcounterincrementfordeclarationsandscanf()andcountvariableprintf()statements.

Input:

ApositiveIntegern

Output:

Printthevalueofthecountervariable

Answer: (penaltyregime:0%)

```
#include<stdio.h>

voidfunc(intn){
    intcount=0;

    if(n==1){
        count++;
        printf("*");
    }
    else{
        count++;
        for(inti=1;i<=n;i++)
         {
             count++;
            for(intj=1;j<=n;j++)
            {
                count++;

               count++;


               count++;
               break;
            }
            count++;
         }
         count++;
        }
        printf("%d",count);
    }

intmain(){
    intnum;
    scanf("%d",&num);
    func(num);
```

```
36
37}
```

	Input	Expected	Got	
✔	2	12	12	✔
✔	1000	5002	5002	✔
✔	143	717	717	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

For input **n = 3**, the output (counter value) is **16**.
Hence, the **time complexity** of the algorithm is **O(n^2)**.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Wednesday,6August2025,9:53PM
State	Finished
Completedon	Wednesday,6August2025,10:31 PM
Timetaken	37mins33secs
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

Convert the following algorithm into a program and find its time complexity using counter method.

```
Factor(num) {
{
   for(i=1;i<=num;++i)
   {
    if(num%i==0)
       {
         printf("%d",i);
       }
    }
 }
```

Note: Noneedofcounterincrementfordeclarationsandscanf()andcountervariableprintf()statement.

Input:

ApositiveIntegern

Output:

Printthevalueofthecountervariable

Answer:

```
#include<stdio.h>

voidFactor(intnum){
    intcount=0;
    //count++;
    for(inti=1;i<=num;++i){
        count++;
        if(num%i==0){
            count++;
            //printf("%d",i);
        }
        count++;
    }
    count++;
    printf("%d",count);
}

intmain(){
    intn;
    scanf("%d",&n);
    Factor(n);
}
```

	Input	Expected	Got	
✔	12	31	31	✔
✔	25	54	54	✔
✔	4	12	12	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

RESULT:

For input **n = 5**, the output (counter value) is **12**.
Hence, the **time complexity** of the algorithm is **O(n)**.

BacktoCourse

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Wednesday,6August2025,10:20PM
State	Finished
Completedon	Wednesday,6August2025,10:32 PM
Timetaken	12mins6secs
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

Convertthefollowingalgorithmintoaprogramandfinditstime

complexityusingcountermethod.

```
voidfunction(intn)
{
    intc=0;
    for(inti=n/2;i<n;i++)
        for(intj=1;j<n;j=2*j)
            for(int k=1; k<n; k = k * 2)
                c++;
}
```

Note: Noneedofcounterincrementfordeclarationsandscanf()andcountvariableprintf()statements.

Input:

ApositiveIntegern

Output:

Printthevalueofthecountervariable

Answer:

```
#include<stdio.h>

voidfunction(intn){
    intcount=0;
    count++;
    for(inti=n/2;i<n;i++){
        count++;
        for(intj=1;j<n;j=2*j){
         count++;
         for(intk=1;k<n;k=k*2){
             count++;
             count++;
         }
         count++;
        }
        count++;
    }
    count++;

    printf("%d",count);
}

intmain(){
    intnum;
    scanf("%d",&num);
    function(num);
}
```

	Input	Expected	Got	
✔	4	30	30	✔
✔	10	212	212	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

RESULT:

For input **n = 4**, the output (counter value) is **30**.
Hence, the **time complexity** of the algorithm is **$O(n^3)$**.

BacktoCourse

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Wednesday,6August2025,10:33PM
State	Finished
Completedon	Wednesday,6August2025,10:34 PM
Timetaken	1min4secs
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

Convertthefollowingalgorithmintoaprogramandfinditstimecomplexityusingcountermethod.

```
voidreverse(intn)
{
   int rev = 0, remainder;
   while (n != 0)
    {
        remainder=n%10;
        rev = rev * 10 + remainder;
        n/= 10;

    }
print(rev);
}
```

Note: Noneedofcounterincrementfordeclarationsandscanf()andcountvariableprintf()statements.

Input:

ApositiveIntegern

Output:

Printthevalueofthecountervariable

Answer:

```
#include<stdio.h>

voidreverse(intn){
    intcount=0;
    count++;
    intrev=0,remainder;
    count++;
    while(n!=0){
        count++;
        remainder=n%10;
        count++;
        rev=rev*10+remainder;
        count++;
        n/=10;
        count++;
    }
    count++;
    //print(rev);

    printf("%d",count);
}

intmain(){
    intnum;
    scanf("%d",&num);
    reverse(num);
}
```

	Input	Expected	Got	
✔	12	11	11	✔
✔	1234	19	19	✔

Passedalltests! ✔

Correct

RESULT:

For input **n = 10**, the output (counter value) is **18**.
Hence, the **time complexity** of the algorithm is **O(log n)**.

Marksforthissubmission:1.00/1.00.

BacktoCourse

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Thursday,18September 2025,10:26 AM
State	Finished
Completedon	Thursday,18September2025,10:39AM
Timetaken	12mins16secs
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

ProblemStatement

Givenanarrayof1sand0sthishasall1sfirstfollowedbyall0s.Aimistofindthenumberof0s.WriteaprogramusingDivideand ConquertoCountthenumberofzeroesinthegivenarray.

InputFormat FirstLineContainsIntegerm–

Sizeofarray

NextmlinesContainsmnumbers–Elementsofanarray

OutputFormat

FirstLineContainsInteger–Numberofzeroespresentinthegivenarray.

Answer:(penaltyregime:0%)

```
#include<stdio.h>

intcountZeroes(intarr[],intlow,inthigh){
    if(low>high){
        return0;
    }
    if(low==high){
        returnarr[low]==0?1:0;
    }
    intmid=(low+high)/2;
    intleftCount=countZeroes(arr,low,mid);
    intrightCount=countZeroes(arr,mid+1,high);
    returnleftCount+rightCount;
}

intmain(){
    intm;
    scanf("%d",&m);
    intarr[m];
    for(inti=0;i<m;i++){
        scanf("%d",&arr[i]);
    }
    intresult=countZeroes(arr,0,m-1);
    printf("%d\n",result);
    return0;
}
```

	Input	Expected	Got	
✔	5 1 1 1 0 0	2	2	✔
✔	10 1 1 1 1 1 1 1 1 1 1	0	0	✔

	Input	Expected	Got	
✔	8 0 0 0 0 0 0 0 0 0	8	8	✔
✔	17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 0	2	2	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

RESULT:

The program successfully reads the number of boys, girls, and students, and displays the total number of students who got grade 'A'.

BacktoCourse

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Started on	Thursday, 18 September 2025, 10:39 AM
State	Finished
Completed on	Thursday, 18 September 2025, 10:52 AM
Time taken	13 mins 15 secs
Marks	1.00/1.00
Grade	**10.00** out of 10.00 (**100**%)

Question1 CorrectMark1.00outof1.00

Givenanarray`nums`ofsize`n`,return*themajorityelement*.

Themajorityelementistheelementthatappearsmorethan`⌊n/2⌋`times.Youmayassumethatthemajorityelementalways exists in the array.

Example1:

```
Input:nums=[3,2,3]
Output:3
```

Example2:

```
Input:nums=[2,2,1,1,1,2,2]
Output:2
```

Constraints:

`n==nums.length`

- `1<=n<=5*10^4`
- `-2^31<=nums[i]<=2^31-1`
-

Forexample:

Input	Result
3 323	3
7 2211122	2

Answer:(penaltyregime:0%)

```
#include<stdio.h>

intmajorityElement(intnums[],intn){
    intcount=0,candidate=nums[0];
    for(inti=0;i<n;i++){
        if(count==0){
            candidate=nums[i];
        }
        count+=(nums[i]==candidate)?1:-1;
    }
    returncandidate;
}

intmain(){
    intn;
    scanf("%d",&n);
    intnums[n];
    for(inti=0;i<n;i++){
        scanf("%d",&nums[i]);
    }
    printf("%d\n",majorityElement(nums,n));
    return0;
}
```

	Input	Expected	Got	
✔	3 323	3	3	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully finds and displays the majority element in the given array.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Thursday,18September 2025,11:16 AM
State	Finished
Completedon	Saturday,18October2025,9:38AM
Timetaken	29days22hours
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

ProblemStatement:

Givenasortedarrayandavaluex,thefloorofxisthelargestelementinarraysmallerthanorequaltox.Writedivideandconquer algorithm to find floor of x.

Input Format

FirstLineContainsIntegern–Sizeofarray NextnlinesContainsnnumbers–Elementsofanarray LastLineContainsIntegerx–Valueforx

OutputFormat

FirstLineContainsInteger–Floorvalueforx

Answer:(penaltyregime:0%)

```c
#include<stdio.h>

intfindFloor(intarr[],intlow,inthigh,intx){
    if(low>high)return-1;
    if(x>=arr[high])returnarr[high];
    intmid=(low+high)/2;
    if(arr[mid]==x)returnarr[mid];
    if(mid>0&&arr[mid-1]<=x&&x<arr[mid])returnarr[mid-1];
    if(x<arr[mid])returnfindFloor(arr,low,mid-1,x);
    returnfindFloor(arr,mid+1,high,x);
}

intmain(){
    intn,x;
    scanf("%d",&n);
    intarr[n];
    for(inti=0;i<n;i++){
        scanf("%d",&arr[i]);
    }
    scanf("%d",&x);
    intresult=findFloor(arr,0,n-1,x);
    printf("%d\n",result);
    return0;
}
```

	Input	Expected	Got	
✔	6 1 2 8 10 12 19 5	2	2	✔
✔	5 10 22 85 108 129 100	85	85	✔

	Input	Expected	Got	
✔	7 3 5 7 9 11 13 15 10	9	9	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully finds and displays the floor value of a given key in a sorted array using the divide-and-conquer method.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT L2

Started on	Saturday, 18 October 2025, 9:34 AM
State	Finished
Completed on	Saturday, 18 October 2025, 9:34 AM
Time taken	26 secs
Marks	1.00/1.00
Grade	**10.00** out of 10.00 (**100**%)

Question1 CorrectMark1.00outof1.00

ProblemStatement:

Givenasortedarrayofintegerssayarr[]andanumberx.Writearecursiveprogramusingdivideandconquerstrategytocheckif thereexisttwoelementsinthearraywhosesum=x.Ifthereexistsuchtwoelementsthenreturnthenumbers,otherwiseprintas "No".

Note:WriteaDivideandConquerSolution

Input Format

FirstLineContainsIntegern–Sizeofarray

Next n lines Contains n numbers – Elements of an arrayLastLineContainsIntegerx–SumValue

OutputFormat

FirstLineContainsInteger–Element1

SecondLineContainsInteger–Element2(Element1andElements2togethersumstovalue"x")

Answer:(penaltyregime:0%)

```c
#include<stdio.h>

intfindPair(intarr[],intleft,intright,intx,int*a,int*b){
    if(left>=right)return0;
    intsum=arr[left]+arr[right];
    if(sum==x){
        *a=arr[left];
        *b=arr[right];
        return1;
    }elseif(sum<x){
        returnfindPair(arr,left+1,right,x,a,b);
    }else{
        returnfindPair(arr,left,right-1,x,a,b);
    }
}

intmain(){
    intn,x;
    scanf("%d",&n);
    intarr[n];
    for(inti=0;i<n;i++){
        scanf("%d",&arr[i]);
    }
    scanf("%d",&x);
    inta,b;
    if(findPair(arr,0,n-1,x,&a,&b)){
        printf("%d\n%d\n",a,b);
    }else{
        printf("No\n");
    }
    return0;
}
```

	Input	Expected	Got	
✔	4 2 4 8 10 14	4 10	4 10	✔

	Input	Expected	Got	

✔	5 2 4 6 8 10 100	No	No	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully finds and displays the pair of elements whose sum equals the given target value using the divide-and-conquer approach.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Saturday,18October2025,9:36AM
State	Finished
Completedon	Saturday,18October2025,9:37AM
Timetaken	40secs
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

Write a Program to Implement the Quick Sort

AlgorithmInputFormat:
Thefirstlinecontainsthenoofelementsinthelist-n The next n lines contain the elements.

Output:
Sortedlistofelements

Forexample:

Input	Result
5 6734129878	1234677898

Answer:

```c
#include<stdio.h>

voidswap(int*a,int*b){
    inttemp=*a;
    *a=*b;
    *b=temp;
}

intpartition(intarr[],intlow,inthigh){
    intpivot=arr[high];
    inti=low-1;
    for(intj=low;j<high;j++){
        if(arr[j]<=pivot){
            i++;
            swap(&arr[i],&arr[j]);
        }
    }
    swap(&arr[i+1],&arr[high]);
    returni+1;
}

voidquickSort(intarr[],intlow,inthigh){
    if(low<high){
        intpi=partition(arr,low,high);
        quickSort(arr,low,pi-1);
        quickSort(arr,pi+1,high);
    }
}

intmain(){
    intn;
    scanf("%d",&n);
    intarr[n];
    for(inti=0;i<n;i++){
        scanf("%d",&arr[i]);
    }
    quickSort(arr,0,n-1);
    for(inti=0;i<n;i++){
        printf("%d",arr[i]);
    }
    printf("\n");
    return0;
}
```

	Input	Expected	Got	
✔	5 6734129878	1234677898	1234677898	✔
✔	10 15678903256111090114	11011325656789090114	11011325656789090114	✔
✔	12 987654321101190	123456789101190	123456789101190	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully implements the **Quick Sort algorithm**, sorting the array elements in ascending order.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Sunday,31August2025,11:10 AM
State	Finished
Completedon	Sunday,31August2025,11:13AM
Timetaken	3mins10secs
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

WriteaprogramtotakevalueVandwewanttomakechangeforVRs,andwehaveinfinitesupplyofeachofthedenominationsin Indiancurrency,i.e.,wehaveinfinitesupplyof{1,2,5,10,20,50,100,500,1000}valuedcoins/notes,whatistheminimum numberofcoinsand/ornotesneededtomakethechange.

InputFormat:

Take an integer from stdin.

OutputFormat:

printtheintegerwhichischangeofthenumber. Example

Input :

64

Output:

4

Explanaton:

Weneeda50Rsnoteanda10Rsnoteandtwo2rupeecoins.

Answer:(penaltyregime:0%)

```
#include<stdio.h>int
main() {
    intV,count=0,i;
    intdenom[]={1000,500,100,50,20,10,5,2,1};
    scanf("%d",&V);
    for(i=0;i<9;i++){
        count+=V/denom[i];
        V%=denom[i];
    }
    printf("%d",count);
    return 0;
}
```

	Input	Expected	Got	
	49	5	5	

Passedalltests!

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully calculates the **minimum number of coins and/or notes** required to make change for a given amount.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Sunday,31August2025,11:14 AM
State	Finished
Completedon	Sunday,31August2025,11:16AM
Timetaken	1min54secs
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

Assume you are an awesome parent and want to give your children some cookies. But, you should give each child at most onecookie.

Eachchildihasagreedfactorg[i],whichistheminimumsizeofacookiethatthechildwillbecontentwith;andeachcookiejhasa sizes[j].Ifs[j]>=g[i],wecanassignthecookiejtothechildi,andthechildiwillbecontent.Yourgoalistomaximizethenumberof your content children and output the maximum number.

Example1:

Input:

3

12 3

2

1 1

Output:

1

Explanation:Youhave3childrenand2cookies.Thegreedfactorsof3childrenare1,2,3.

And even though you have 2 cookies, since their size is both 1, you could only make the child whose greed factor is 1 content.

You need to output 1.

Constraints:

1<=g.length<=3*10^4

0<=s.length<=3*10^4

1<=g[i],s[j]<=2^31-1

Answer:(penaltyregime:0%)

```
#include<stdio.h>
#include<stdlib.h>

intcmp(constvoid*a,constvoid*b){
    return(*(int*)a-*(int*)b);
}

intmain(){
    intn,m,i,j,result=0;
    scanf("%d",&n);
    intg[n];
              for(i=0;i<n;i++)scanf("%d",&g[i]);
    scanf("%d",&m);
    ints[m];
              for(i=0;i<m;i++)scanf("%d",&s[i]);
    qsort(g,n,sizeof(int),cmp);
    qsort(s,m,sizeof(int),cmp);
    i=0;j=0;
    while(i<n&&j<m){
        if(s[j]>=g[i]){
            result++;
            i++;
            j++;
        }else{
            j++;
        }
    }
    printf("%d",result);
    return0;
}
```

	Input	Expected	Got	
✔	2 12 3 123	2	2	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully computes the **maximum number of children** who can be satisfied with the given cookies.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Sunday,31August2025,11:16 AM
State	Finished
Completedon	Sunday,31August2025,2:11PM
Timetaken	2hours55mins
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

A person needs to eat burgers. Each burger contains a count of calorie. After eating the burger, the person needs to run adistance to burn out his calories.

Ifhehaseateniburgerswithccalorieseach,thenhehastorunatleast3^{i}*ckilometerstoburnoutthecalories.For example,ifheate3 burgerswiththecountofcalorieintheorder:[1,3,2],thekilometersheneedstorunare(3^{0}*1)+(3^{1}*3)+(3^{2}*2)= 1+9+18=28.

But this is not the minimum, so need to try out other orders of consumption and choose the minimum value. Determine theminimum distance he needs to run. Note: He can eat burger in any order and use an efficient sorting algorithm.Apply greedy approach to solvethe problem.

InputFormat

FirstLinecontainsthenumberofburgers

Secondlinecontainscaloriesofeachburgerwhichisnspace-separateintegers

OutputFormat

Print:Minimumnumberofkilometersneededtoruntoburnoutthecalories

SampleInput

```
3
5107
```

SampleOutput

```
76
```

Forexample:

Test	Input	Result
TestCase1	3 132	18

Answer:(penaltyregime:0%)

```
#include<stdio.h>
#include<math.h>

intmain(){
    intn;
    scanf("%d",&n);
    inta[n];
    for(inti=0;i<n;i++){
        scanf("%d",&a[i]);
    }

    for(inti=0;i<n;i++){
        for(intj=0;j<n;j++){
            if(a[i]>a[j]){
                intt=a[i];
                a[i]=a[j];
                a[j]=t;
            }
        }
    }

    intto=0,s=0;
    for(intj=0;j<n;j++){
        to=(pow(n,j))*(a[j]);
        s+=to;
    }
    printf("%d",s);
    return0;
```

```
29}
```

	Test	Input	Expected	Got	
✔	TestCase1	3 132	18	18	✔
✔	TestCase2	4 7496	389	389	✔
✔	TestCase3	3 5107	76	76	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully calculates the **minimum number of calories burned** based on the order of burgers eaten.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Started on	Sunday, 31 August 2025, 11:18 AM
State	Finished
Completed on	Sunday, 31 August 2025, 11:19 AM
Time taken	55 secs
Marks	1.00/1.00
Grade	**10.00** out of 10.00 (**100**%)

Question1 CorrectMark1.00outof1.00

GivenanarrayofNinteger,wehavetomaximizethesumofarr[i]*i,whereiistheindexoftheelement(i=0,1,2,...,N).Writean algorithm based on Greedy technique with a Complexity O(nlogn).

InputFormat:

Firstlinespecifiesthenumberofelements-n

Thenextnlinescontainthearrayelements.

OutputFormat:

MaximumArraySumtobeprinted.

SampleInput:

5

2534 0

Sampleoutput:

40

Answer:(penaltyregime:0%)

```
#include<stdio.h>
#include<stdlib.h>

intcmp(constvoid*a,constvoid*b){
    return(*(int*)a-*(int*)b);
}

intmain(){
    intn,i;
    scanf("%d",&n);
    intarr[n];
    for(i=0;i<n;i++)scanf("%d",&arr[i]);
    qsort(arr,n,sizeof(int),cmp);
    longlongresult=0;
    for(i=0;i<n;i++){
        result+=(longlong)arr[i]*i;
    }
    printf("%lld",result);
    return0;
}
```

	Input	Expected	Got	
✔	5 2 5 3 4 0	40	40	✔

	Input	Expected	Got	
✔	10 2 2 2 4 4 3 3 5 5 5	191	191	✔
✔	2 45 3	45	45	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully finds the **maximum sum of i × arr[i]** using a Greedy algorithm approach.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Sunday,31August2025,11:19 AM
State	Finished
Completedon	Sunday,31August2025,11:21AM
Timetaken	1min10secs
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

Giventwoarraysarray_One[]andarray_Two[]ofsamesizeN.Weneedtofirstrearrangethearrayssuchthatthesumofthe product of pairs(1 element from each) is minimum. That is SUM (A[i] * B[i]) for all i is minimum.

Forexample:

Input	Result
3 1 2 3 4 5 6	28

Answer:(penaltyregime:0%)

```
#include<stdio.h>
#include<stdlib.h>

intcmpAsc(constvoid*a,constvoid*b){
    return(*(int*)a-*(int*)b);
}

intcmpDesc(constvoid*a,constvoid*b){
    return(*(int*)b-*(int*)a);
}

intmain(){
    intn,i;
    scanf("%d",&n);
    intA[n],B[n];
              for(i=0;i<n;i++)scanf("%d",&A[i]);
              for(i=0;i<n;i++)scanf("%d",&B[i]);
    qsort(A,n,sizeof(int),cmpAsc);
    qsort(B,n,sizeof(int),cmpDesc);
    longlongresult=0;
    for(i=0;i<n;i++){
        result+=(longlong)A[i]*B[i];
    }
    printf("%lld",result);
    return0;
}
```

	Input	Expected	Got	
✔	3 1 2 3 4 5 6	28	28	✔

	Input	Expected	Got	
✔	4 7 5 1 2 1 3 4 1	22	22	✔
✔	5 20 10 30 10 40 8 9 4 3 10	590	590	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully computes the **minimum product** of `k` elements in an array using a **Greedy approach**.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Friday,31October2025,6:59AM
State	Finished
Completedon	Friday,31October2025,7:02AM
Timetaken	3mins26secs
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark10.00outof10.00

PlayingwithNumbers:

RamandSitaareplayingwithnumbersbygivingpuzzlestoeachother.NowitwasRamterm,sohegaveSitaapositiveinteger'n' andtwonumbers1and3.Heaskedhertofindthepossiblewaysbywhichthenumberncanberepresentedusing1and3.Write any efficient algorithm to find the possible ways.

Example1:

Input:*6*

Output:*6*

Explanation:*Thereare6waysto6representnumberwith1and3*

1+1+1+1+1+1

3+3

1+1+1+3

1+1+3+1

1+3+1+1

3+1+1+1

Input Format

FirstLinecontainsthenumbern

OutputFormat

Print:Thenumberofpossibleways'n'canberepresentedusing1and3

SampleInput

6

SampleOutput

6

Answer:(penaltyregime:0%)

```
#include<stdio.h>

intmain(){
    intn;
    scanf("%d",&n);
    longlongdp[n+1];
    dp[0]=1;
    for(inti=1;i<=n;i++){
        dp[i]=dp[i-1];
        if(i>=3)dp[i]+=dp[i-3];
    }
    printf("%lld",dp[n]);
    return0;
}
```

	Input	Expected	Got	
✔	6	6	6	✔

	Input	Expected	Got	
✔	25	8641	8641	✔
✔	100	24382819596721629	24382819596721629	✔

Passedalltests! ✔

Correct

Marksforthissubmission:10.00/10.00.

BacktoCourse

RESULT:

The program successfully computes the **number of possible ways** to represent a given integer `n` as a sum of 1s and 3s using **Dynamic Programming**.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Saturday,18October2025,9:40AM
State	Finished
Completedon	Saturday,18October2025,9:41AM
Timetaken	5mins30secs
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark10.00outof10.00

PlayingwithChessboard:

Ramisgivenwithann*nchessboardwitheachcellwithamonetaryvalue.Ramstandsatthe(0,0),thatthepositionofthetopleft whiterook.Heisbeengivenatasktoreachthebottomrightblackrookposition(n-1,n-1)constrainedthatheneedstoreachthe positionbytravelingthemaximummonetarypathundertheconditionthathecanonlytravelonesteprightoronestepdownthe board.Helpramtoachieveitbyprovidinganefficient DPalgorithm.

Example:

Input

3

124

234

871

Output:

19

Explanation:

Totally there will be 6 paths among that the optimal

isOptimal path value:1+2+8+7+1=19

Input Format

FirstLinecontainstheintegern

Thenextnlinescontainthen*nchessboardvalues

OutputFormat

PrintMaximummonetaryvalueofthepath

Answer:(penaltyregime:0%)

```
#include<stdio.h>

intmax(inta,intb){
    returna>b?a:b;
}

intmain(){
    intn;
    scanf("%d",&n);
    intboard[n][n];
    for(inti=0;i<n;i++){
        for(intj=0;j<n;j++){
            scanf("%d",&board[i][j]);
        }
    }
    intdp[n][n];
    dp[0][0]=board[0][0];
    for(inti=1;i<n;i++){
        dp[i][0]=dp[i-1][0]+board[i][0];
        dp[0][i]=dp[0][i-1]+board[0][i];
    }
    for(inti=1;i<n;i++){
        for(intj=1;j<n;j++){
            dp[i][j]=max(dp[i-1][j],dp[i][j-1])+board[i][j];
        }
    }
    printf("%d\n",dp[n-1][n-1]);
    return0;
}
```

	Input	Expected	Got	
✔	3 124 234 871	19	19	✔
✔	3 131 151 421	12	12	✔
✔	4 1134 1578 2346 1690	28	28	✔

Passedalltests! ✔

Correct

Marksforthissubmission:10.00/10.00.

BacktoCourse

RESULT:

The program successfully computes the **number of unique paths** on a chessboard using **Dynamic Programming**.

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6 JAYASREE B 2024-IT

L2

Startedon	Saturday,18October2025,9:39AM
State	Finished
Completedon	Saturday,18October2025,9:40AM
Timetaken	6mins7secs
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

Giventwostringsfindthelengthofthecommonlongestsubsequence(neednotbecontiguous)betweenthetwo.

Example:

s1:ggtabe

s2:tgatasb

s1	a	g	**g**	**t**	**a**	**b**	
s2	**g**	x	**t**	**x**	**a**	**y**	**b**

Thelengthis 4

SolveingitusingDynamicProgramming

Forexample:

Input	Result
aab azb	2

Answer:(penaltyregime:0%)

```
#include<stdio.h>
#include<string.h>

intmax(inta,intb){
    returna>b?a:b;
}

intmain(){
    chars1[1000],s2[1000];
    scanf("%s",s1);
    scanf("%s",s2);
    intn=strlen(s1);
    intm=strlen(s2);
    intdp[n+1][m+1];
    for(inti=0;i<=n;i++){
        for(intj=0;j<=m;j++){
            if(i==0||j==0)
                dp[i][j]=0;
            elseif(s1[i-1]==s2[j-1])
                dp[i][j]=dp[i-1][j-1]+1;
            else
                dp[i][j]=max(dp[i-1][j],dp[i][j-1]);
        }
    }
    printf("%d\n",dp[n][m]);
    return0;
}
```

	Input	Expected	Got	
✔	aab azb	2	2	✔
✔	ABCD ABCD	4	4	✔

Passedalltests!

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

Result:

- The final value `dp[m][n]` gives the **length of the Longest Common Subsequence**.

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6 JAYASREE B 2024-IT

L2

Startedon	Saturday,18October2025,9:38AM
State	Finished
Completedon	Saturday,18October2025,9:39AM
Timetaken	5min8secs
Marks	1.00/1.00
Grade	**10.00**outof10.00(**100**%)

Question1 CorrectMark1.00outof1.00

Problemstatement:

FindthelengthoftheLongestNon-decreasingSubsequenceinagivenSequence.

Eg:

Input:9

Sequence:[-1,3,4,5,2,2,2,2,3]

thesubsequenceis[-1,2,2,2,2,3] Output:6

Answer:(penaltyregime:0%)

```c
#include<stdio.h>

intmax(inta,intb){
    returna>b?a:b;
}

intmain(){
    intn;
    scanf("%d",&n);
    inta[n],dp[n];
    for(inti=0;i<n;i++){
        scanf("%d",&a[i]);
        dp[i]=1;
    }
    for(inti=1;i<n;i++){
        for(intj=0;j<i;j++){
            if(a[i]>=a[j]){
                dp[i]=max(dp[i],dp[j]+1);
            }
        }
    }
    intmaxLen=0;
    for(inti=0;i<n;i++){
        if(dp[i]>maxLen)maxLen=dp[i];
    }
    printf("%d\n",maxLen);
    return0;
}
```

	Input	Expected	Got	
✔	9 -134522223	6	6	✔
✔	7 1224576	6	6	✔

Passedalltests!

✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

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6 JAYASREE B 2024-IT

L2

Startedon	Saturday,18October2025,9:28AM
State	Finished
Completedon	Saturday,18October2025,9:31AM
Timetaken	2mins19secs
Marks	1.00/1.00
Grade	**4.00**outof4.00(**100**%)

Question1 CorrectMark1.00outof1.00

FindDuplicateinArray.

Givenareadonlyarrayofnintegersbetween1andn,findonenumberthatrepeats. InputFormat:

FirstLine-Numberofelements n

Lines - n Elements

OutputFormat:

Elementx-Thatisrepeated

Forexample:

Input	Result
5 11234	1

Answer:(penaltyregime:0%)

```
#include<stdio.h>
#include<stdlib.h>

intmain(){
    intn;
    scanf("%d",&n);
    inta[n];
    for(inti=0;i<n;i++){
        scanf("%d",&a[i]);
    }
    for(inti=0;i<n;i++){
        intindex=abs(a[i])-1;
        if(a[index]<0){
            printf("%d\n",abs(a[i]));
            return0;
        }
        a[index]=-a[index];
    }
    return0;
}
```

	Input	Expected	Got	
✔	11 109765123847	7	7	✔
✔	5 12344	4	4	✔
✔	5 11234	1	1	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully identifies and prints duplicate elements in an array using **O(n^2) time** and **O(1) space** complexity.

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6 JAYASREE B 2024-IT

L2

Startedon	Saturday,18October2025,9:31AM
State	Finished
Completedon	Saturday,18October2025,9:32AM
Timetaken	37secs
Marks	1.00/1.00
Grade	**4.00**outof4.00(**100**%)

Question1 CorrectMark1.00outof1.00

FindDuplicateinArray.

Givenareadonlyarrayofnintegersbetween1andn,findonenumberthatrepeats. InputFormat:

FirstLine-Numberofelements n

Lines - n Elements

OutputFormat:

Elementx-Thatisrepeated

Forexample:

Input	Result
5 11234	1

Answer:(penaltyregime:0%)

```
#include<stdio.h>
#include<stdlib.h>

intmain(){
    intn;
    scanf("%d",&n);
    inta[n];
    for(inti=0;i<n;i++){
        scanf("%d",&a[i]);
    }
    for(inti=0;i<n;i++){
        intindex=abs(a[i])-1;
        if(a[index]<0){
            printf("%d\n",abs(a[i]));
            return0;
        }
        a[index]=-a[index];
    }
    return0;
}
```

	Input	Expected	Got	
✔	11 109765123847	7	7	✔
✔	5 12344	4	4	✔
✔	5 11234	1	1	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program efficiently finds duplicate elements in an array using **O(n) time** and **O(1) space** complexity.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Saturday,18October2025,9:32AM
State	Finished
Completedon	Saturday,18October2025,9:32AM
Timetaken	3mins8secs
Marks	1.00/1.00
Grade	**30.00**outof30.00(**100**%)

Question1 CorrectMark1.00outof1.00

Findtheintersectionoftwosortedarrays. OR

in other words,

Given2sortedarrays,findalltheelementswhichoccurinboththearrays. InputFormat

· ThefirstlinecontainsT,thenumberoftestcases.FollowingTlinescontain:

1. Line1containsN1,followedbyN1integersofthefirstarray

2. Line 2 contains N2, followed by N2 integers of the second

arrayOutputFormat

The intersection of the arrays in a single line

Example

Input:

1

3101757

627101557246

Output:

1057

Input:

1

612345 6

21 6

Output:

1 6

Forexample:

Input	Result
1 310 17 57 6 27 10 1557246	1057

Answer:(penaltyregime:0%)

```
#include<stdio.h>

intmain(){
    intT;
    scanf("%d",&T);
    while(T--){
        intN1,N2;
        scanf("%d",&N1);
        inta[N1];
                for(inti=0;i<N1;i++){
            scanf("%d",&a[i]);
        }
        scanf("%d",&N2);
        intb[N2];
                for(inti=0;i<N2;i++){
            scanf("%d",&b[i]);
        }
        inti=0,j=0;
        while(i<N1&&j<N2){
            if(a[i]<b[j]){
                i++;
            }elseif(a[i]>b[j]){
                j++;
            }else{
```

```
                printf("%d",a[i]);
                i++;
                j++;
            }
        }
        printf("\n");
    }
    return0;
}
```

	Input	Expected	Got	
✔	1 310 17 57 6 27 10 1557 246	1057	1057	✔
✔	1 61 23 45 2 16	16	16	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully finds the intersection of two sorted arrays using **O(m × n) time** and **O(1) space**.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Saturday,18October2025,9:33AM
State	Finished
Completedon	Saturday,18October2025,9:33AM
Timetaken	5mins60secs
Marks	1.00/1.00
Grade	**30.00**outof30.00(**100**%)

Question1 CorrectMark1.00outof1.00

Findtheintersectionoftwosortedarrays. OR

in other words,

Given2sortedarrays,findalltheelementswhichoccurinboththearrays. InputFormat

· ThefirstlinecontainsT,thenumberoftestcases.FollowingTlinescontain:

1. Line1containsN1,followedbyN1integersofthefirstarray

2. Line 2 contains N2, followed by N2 integers of the second

arrayOutputFormat

The intersection of the arrays in a single line

Example

Input:

1

3101757

627101557246

Output:

1057

Input:

1

612345 6

21 6

Output:

1 6

Forexample:

Input	Result
1 310 17 57 6 27 10 1557246	1057

Answer:(penaltyregime:0%)

```
#include<stdio.h>

intmain(){
    intT;
    scanf("%d",&T);
    while(T--){
        intN1,N2;
        scanf("%d",&N1);
        inta[N1];
                for(inti=0;i<N1;i++){
            scanf("%d",&a[i]);
        }
        scanf("%d",&N2);
        intb[N2];
                for(inti=0;i<N2;i++){
            scanf("%d",&b[i]);
        }
        inti=0,j=0;
        while(i<N1&&j<N2){
            if(a[i]<b[j]){
                i++;
            }elseif(a[i]>b[j]){
                j++;
            }else{
```

```
                printf("%d",a[i]);
                i++;
                j++;
            }
        }
        printf("\n");
    }
    return0;
}
```

	Input	Expected	Got	
✔	1 310 17 57 6 27 10 1557 246	1057	1057	✔
✔	1 61 23 45 2 16	16	16	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully finds the intersection of two sorted arrays in **O(m + n) time** and **O(1) space**.

RAJALAKSHMI ENGINEERING COLLEGE

6 JAYASREE B 2024-IT

L2

Startedon	Saturday,18October2025,9:35AM
State	Finished
Completedon	Saturday,18October2025,9:35AM
Timetaken	4mins5secs
Marks	1.00/1.00
Grade4.00	outof4.00(**100**%)

Question1 CorrectMark1.00outof1.00

GivenanarrayAofsortedintegersandanothernonnegativeintegerk,findifthereexists2indicesiandjsuchthatA[j]-A[i]=k,i !=j.

InputFormat:

FirstLinen-Numberofelementsinanarray Next n

Lines - N elements in the array

k-Non-NegativeInteger

OutputFormat:

1-Ifpairexists

0-Ifnopairexists

ExplanationforthegivenSampleTestcase: YES

as 5 - 1 = 4

SoReturn1.

Forexample:

Input	Result
3 135 4	1

Answer:(penaltyregime:0%)

```
#include<stdio.h>

int main(){
    int n,k;
    scanf("%d",&n);
    int a[n];
    for(int i=0;i<n;i++){
        scanf("%d",&a[i]);
    }
    scanf("%d",&k);
    int i=0,j=1;
    while(i<n&&j<n){
        int diff=a[j]-a[i];
        if(diff==k&&i!=j){
            printf("1\n");
            return 0;
        }elseif(diff<k){
            j++;
        }else{
            i++;
            if(i==j)j++;
        }
    }
    printf("0\n");
    return 0;
}
```

	Input	Expected	Got	
✔	3 135 4	1	1	✔

	Input	Expected	Got	
✔	10 1468121415202125 1	1	1	✔
✔	10 1235111416242829 0	0	0	✔
✔	10 0237131415202425 10	1	1	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully determines whether there exists a pair of integers in the given array with the specified difference, achieving **O(n²) time** and **O(1) space complexity**.

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6 JAYASREE B 2024-IT

L2

Startedon	Saturday,18October2025,9:36AM
State	Finished
Completedon	Saturday,18October2025,9:36AM
Timetaken	3mins50secs
Marks	1.00/1.00
Grade	**4.00**outof4.00(**100**%)

Question1 CorrectMark1.00outof1.00

GivenanarrayAofsortedintegersandanothernonnegativeintegerk,findifthereexists2indicesiandjsuchthatA[j]-A[i]=k,i !=j.

InputFormat:

FirstLinen-Numberofelementsinanarray Next n

Lines - N elements in the array

k-Non-NegativeInteger

OutputFormat:

1-Ifpairexists

0-Ifnopairexists

ExplanationforthegivenSampleTestcase: YES

as 5 - 1 = 4

SoReturn1.

Forexample:

Input	Result
3 135 4	1

Answer:(penaltyregime:0%)

```
#include<stdio.h>

intmain(){
    intn,k;
    scanf("%d",&n);
    inta[n];
    for(inti=0;i<n;i++){
        scanf("%d",&a[i]);
    }
    scanf("%d",&k);
    inti=0,j=1;
    while(i<n&&j<n){
        intdiff=a[j]-a[i];
        if(diff==k&&i!=j){
            printf("1\n");
            return0;
        }elseif(diff<k){
            j++;
        }else{
            i++;
            if(i==j)j++;
        }
    }
    printf("0\n");
    return0;
}
```

	Input	Expected	Got	
✔	3 135 4	1	1	✔

	Input	Expected	Got	
✔	10 1468121415202125 1	1	1	✔
✔	10 1235111416242829 0	0	0	✔
✔	10 0237131415202425 10	1	1	✔

Passedalltests! ✔

Correct

Marksforthissubmission:1.00/1.00.

BacktoCourse

RESULT:

The program successfully identifies whether a pair with the given difference exists in an array using **O(n)** time and **O(1)** space complexity.