INSTITUTE OF INFORMATION TECHNOLOGY

JAHANGIRNAGAR UNIVERSITY

Lab Exam : 01

Submission Date : 17/01/2022

Course Tittle : Algorithm Analysis and Design Lab

Course Code : ICT - 2202

Submitted To

Dr. M. Abu Yousuf

Professor

IIT – JU

Submitted By

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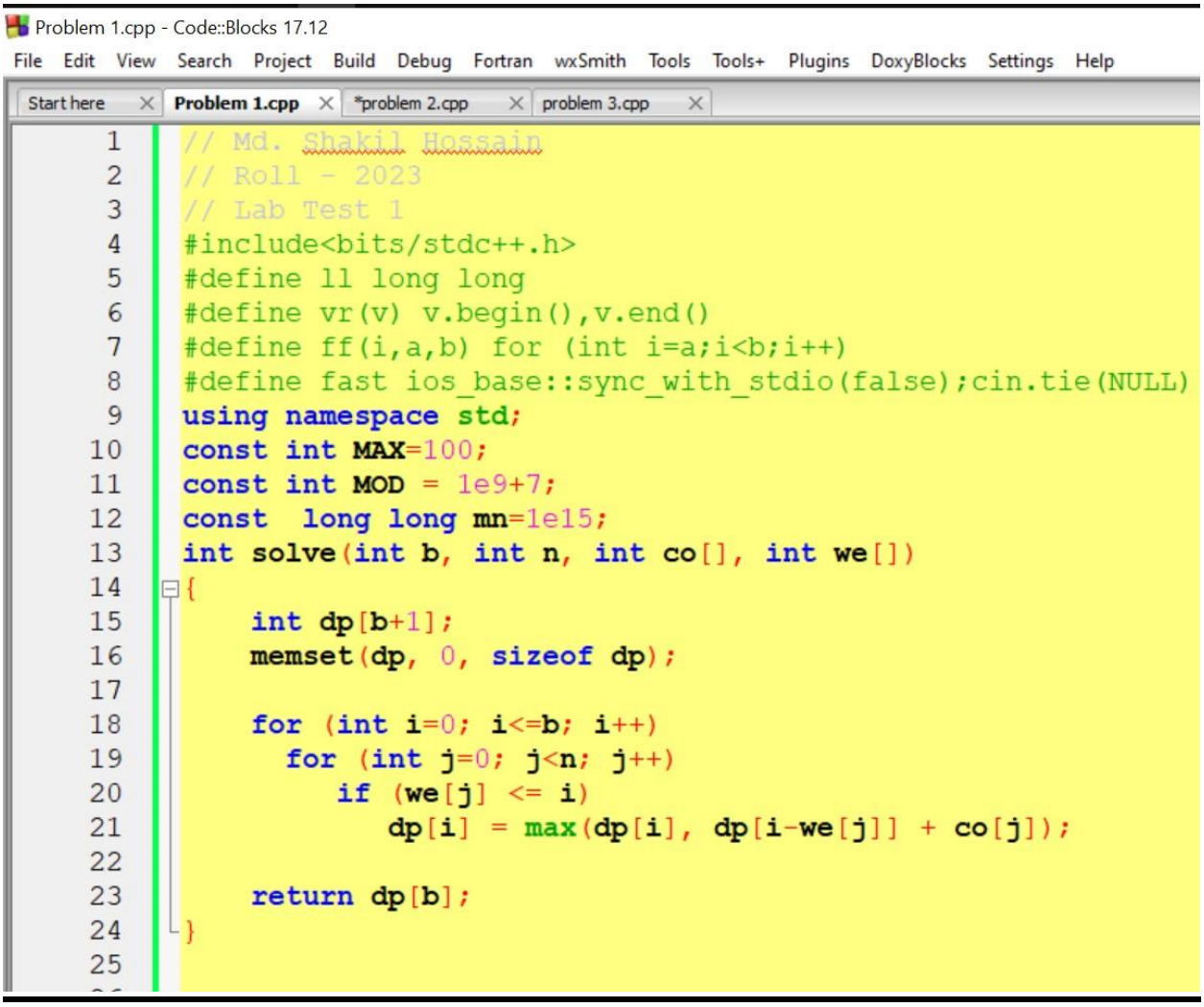
Roll – 2023

2nd year 2st Semester

IIT – JU

Answer to the problem no - 1



Problem 1.cpp - Code::Blocks 17.12

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Start here | Problem 1.cpp | *problem 2.cpp | problem 3.cpp

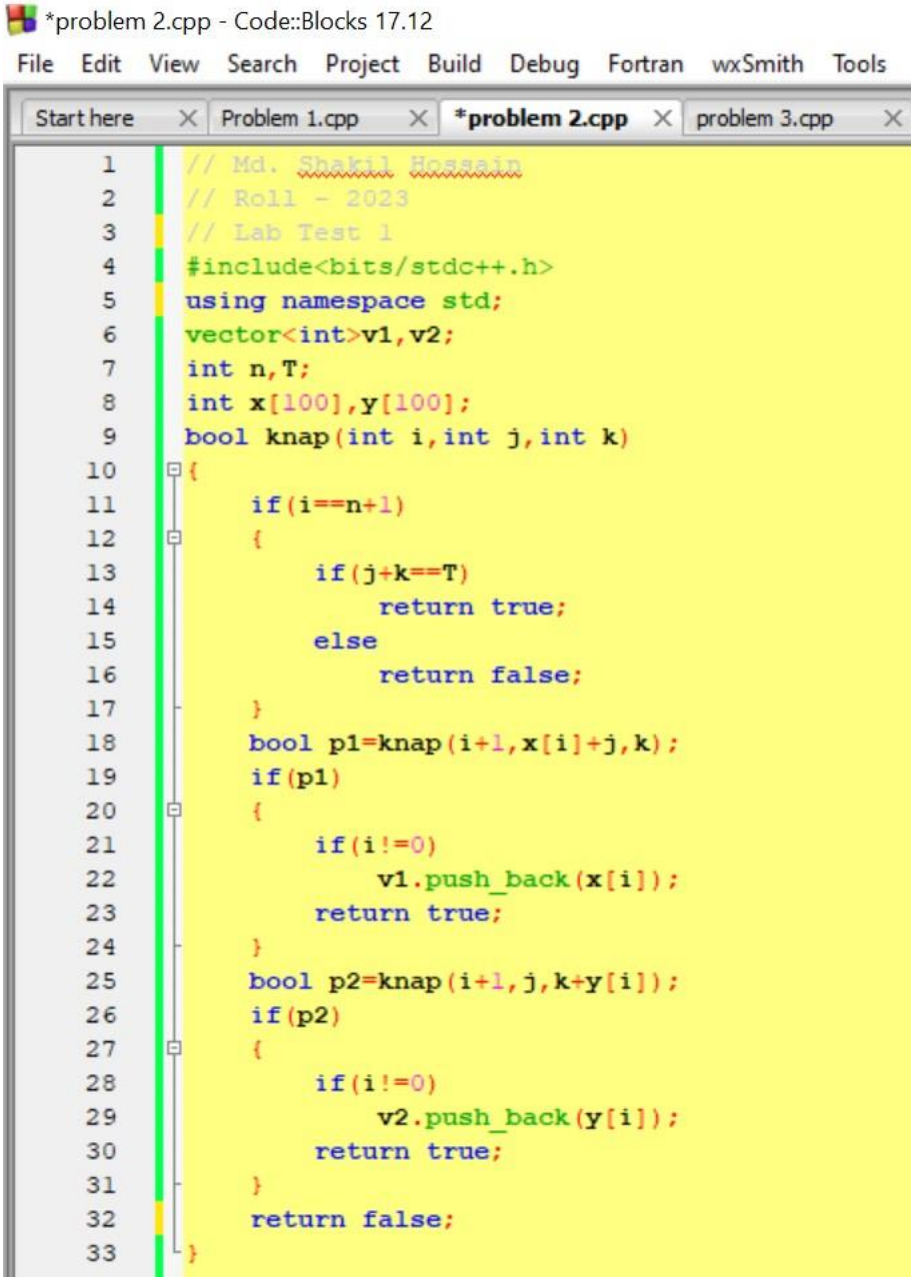
```
25
26
27  int main()
28  {
29    int n,b;
30    cout<<"n=";
31    cin>>n;
32    cout<<"B=";
33    cin>>b;
34
35      int we[n],co[n];
36      cout<<"Weights ="<<endl;
37      for(int i=0;i<n;i++){
38            cin>>we[i];
39      }
40      cout<<"Costs ="<<endl;
41      for(int i=0;i<n;i++){
42            cin>>co[i];
43      }
44      cout << "Maximum Cost="<<solve(b, n, co, we)<<endl;
45      cout<<"weight="<<b<<endl;
46
47      return 0;
48  }
49
```

"D:\Github\Algorithm-Analysis-and-Design-Lab\Exam\Exam 1\Code\Problem 1.exe"

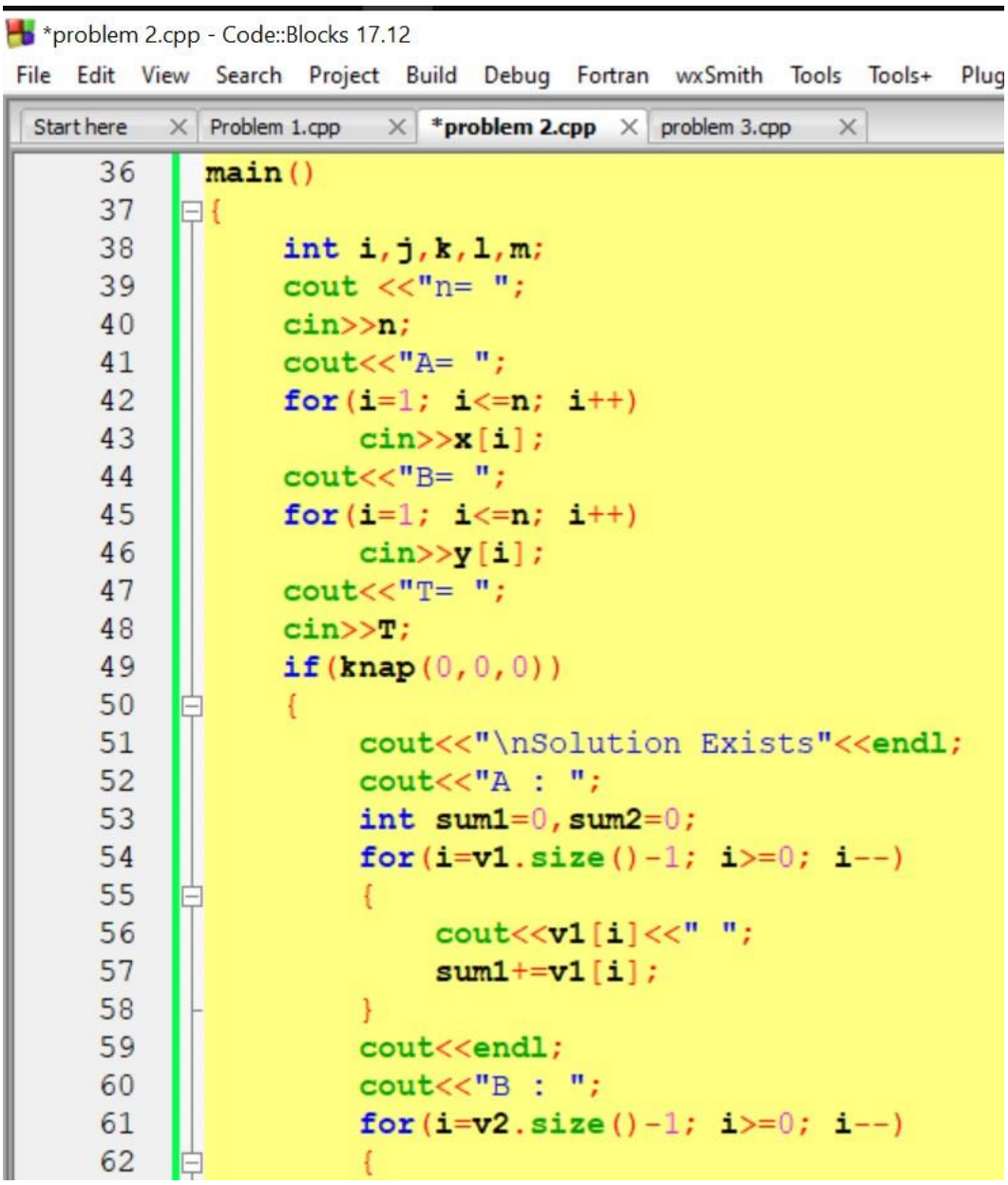
```
n= 5
B= 1000
Weights: 21 23 24 22 24
Costs: 23 25 24 24 22

Maximum Cost=1094
weight=1000
```

Answer to the problem no - 2




```cpp
// Md. Shakil Hossain
// Roll - 2023
// Lab Test 1
#include<bits/stdc++.h>
using namespace std;
vector<int>v1,v2;
int n,T;
int x[100],y[100];
bool knap(int i,int j,int k)
{
    if(i==n+1)
    {
        if(j+k==T)
            return true;
        else
            return false;
    }
    bool p1=knap(i+1,x[i]+j,k);
    if(p1)
    {
        if(i!=0)
            v1.push_back(x[i]);
        return true;
    }
    bool p2=knap(i+1,j,k+y[i]);
    if(p2)
    {
        if(i!=0)
            v2.push_back(y[i]);
        return true;
    }
    return false;
}
```


*problem 2.cpp - Code::Blocks 17.12
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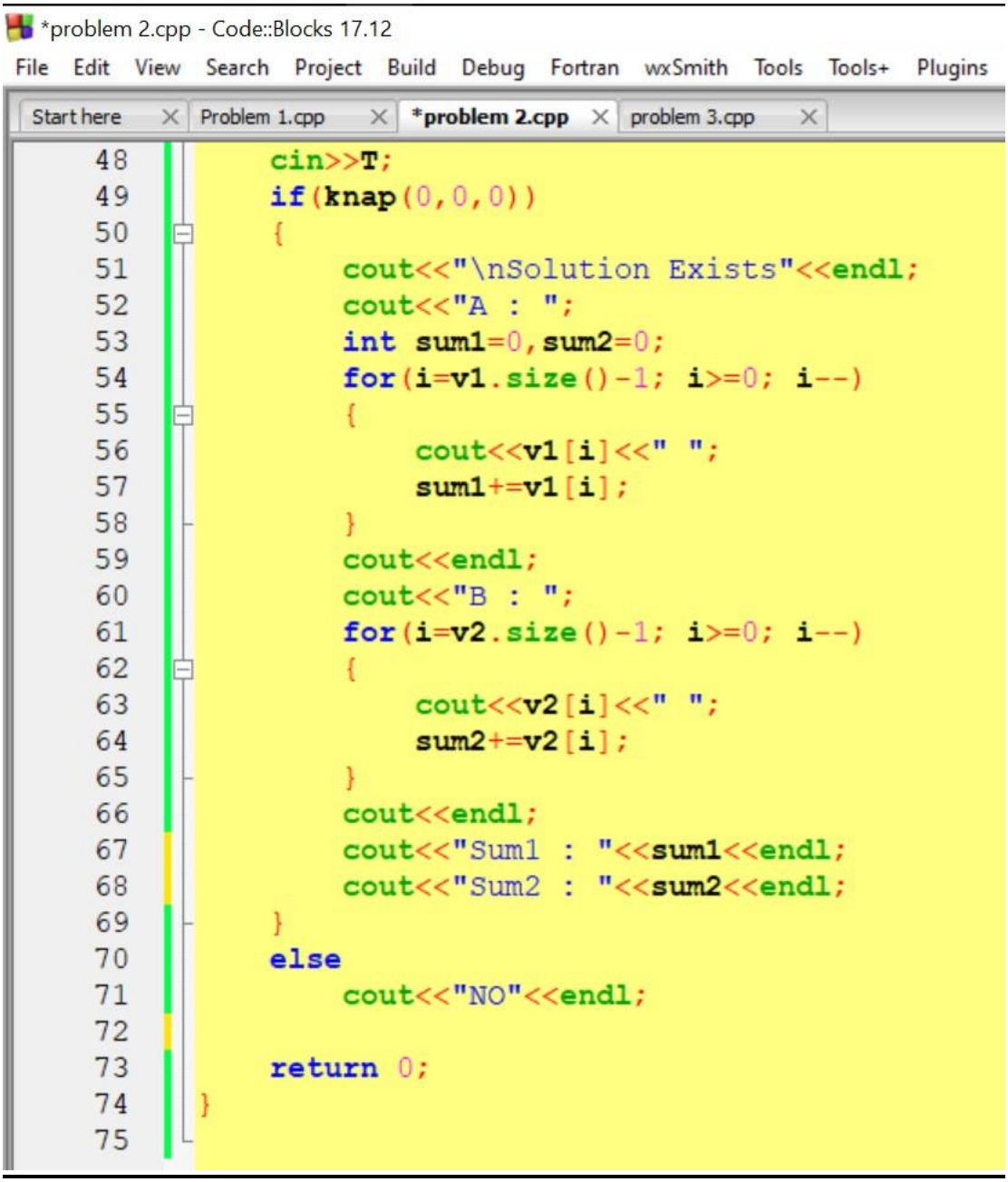
Start here
Problem 1.cpp
*problem 2.cpp
problem 3.cpp
36 main()
37 {
38 int i,j,k,l,m;
39 cout <<"n= ";
40 cin>>n;
41 cout<<"A= ";
42 for(i=1; i<=n; i++)
43 cin>>x[i];
44 cout<<"B= ";
45 for(i=1; i<=n; i++)
46 cin>>y[i];
47 cout<<"T= ";
48 cin>>T;
49 if(knap(0,0,0))
50 {
51 cout<<"\nSolution Exists"<<endl;
52 cout<<"A : ";
53 int sum1=0,sum2=0;
54 for(i=v1.size()-1; i>=0; i--)
55 {
56 cout<<v1[i]<<" ";
57 sum1+=v1[i];
58 }
59 cout<<endl;
60 cout<<"B : ";
61 for(i=v2.size()-1; i>=0; i--)
62 {


*problem 2.cpp - Code::Blocks 17.12
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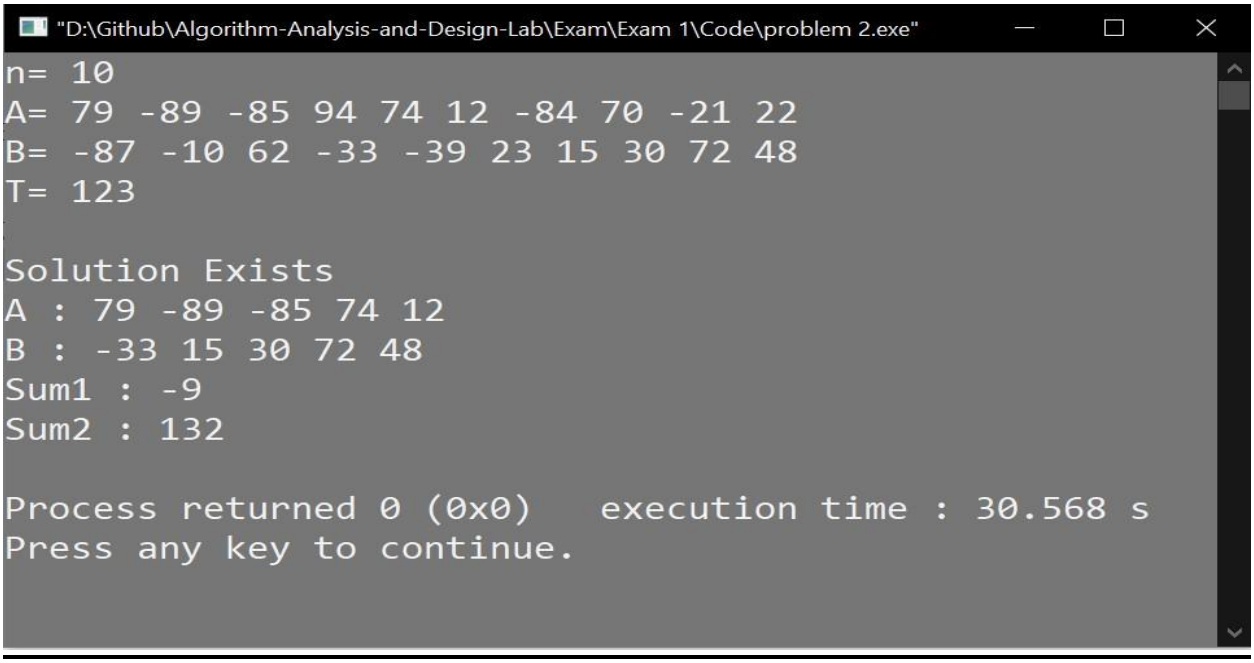
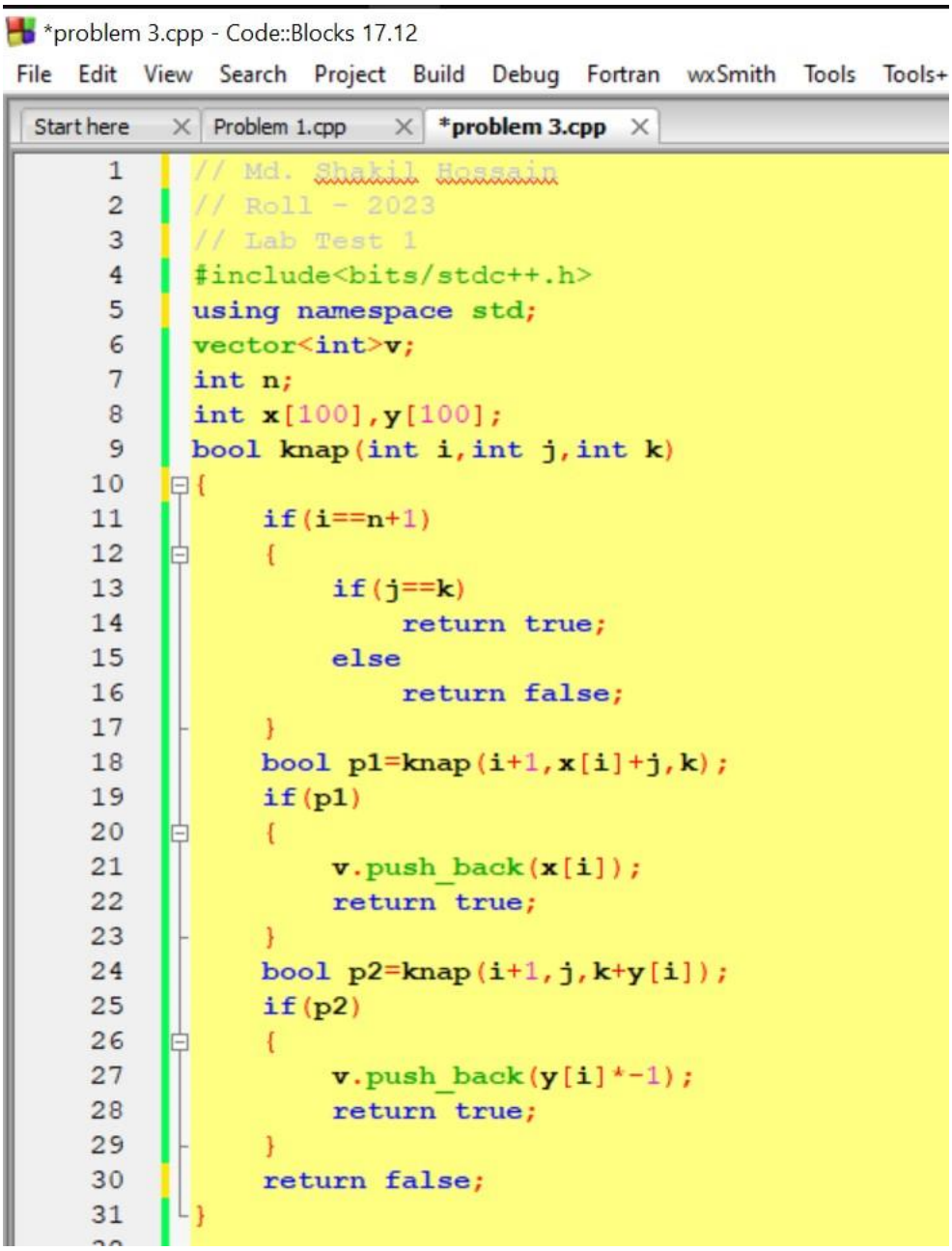
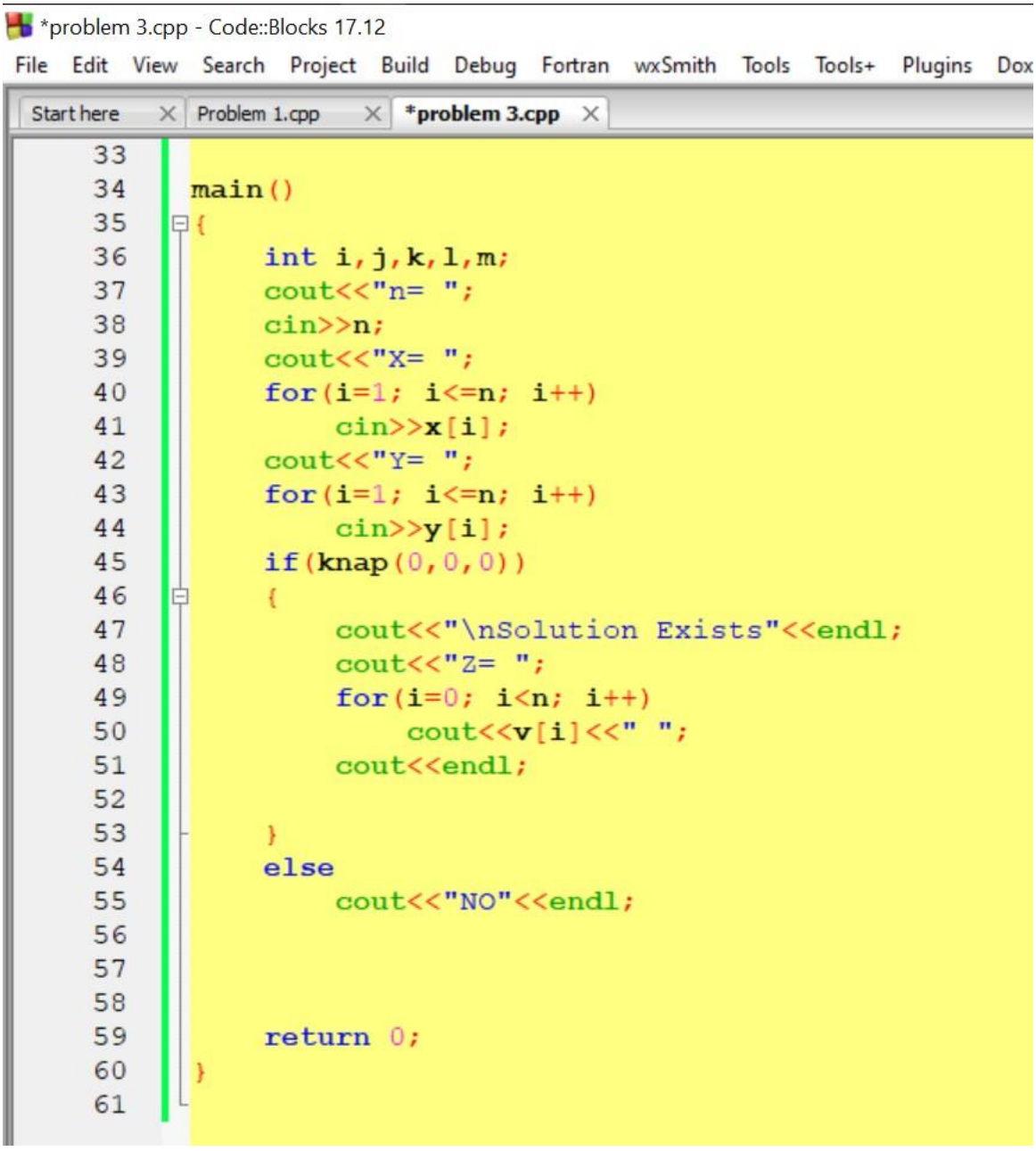
Start here
Problem 1.cpp
*problem 2.cpp
problem 3.cpp
48 cin>>T;
49 if(knap(0,0,0))
50 {
51 cout<<"\nSolution Exists"<<endl;
52 cout<<"A : ";
53 int sum1=0,sum2=0;
54 for(i=v1.size()-1; i>=0; i--)
55 {
56 cout<<v1[i]<<" ";
57 sum1+=v1[i];
58 }
59 cout<<endl;
60 cout<<"B : ";
61 for(i=v2.size()-1; i>=0; i--)
62 {
63 cout<<v2[i]<<" ";
64 sum2+=v2[i];
65 }
66 cout<<endl;
67 cout<<"Sum1 : "<<sum1<<endl;
68 cout<<"Sum2 : "<<sum2<<endl;
69 }
70 else
71 cout<<"NO"<<endl;
72
73 return 0;
74 }
75


"D:\Github\Algorithm-Analysis-and-Design-Lab\Exam\Exam 1\Code\problem 2.exe"
n= 10
A= 79 -89 -85 94 74 12 -84 70 -21 22
B= -87 -10 62 -33 -39 23 15 30 72 48
T= 123
Solution Exists
A : 79 -89 -85 74 12
B : -33 15 30 72 48
Sum1 : -9
Sum2 : 132
Process returned 0 (0x0) execution time : 30.568 s
Press any key to continue.

Answer to the problem no - 3




```cpp
// Md. Shakil Hossain
// Roll - 2023
// Lab Test 1
#include<bits/stdc++.h>
using namespace std;
vector<int>v;
int n;
int x[100],y[100];
bool knap(int i,int j,int k)
{
    if(i==n+1)
    {
        if(j==k)
            return true;
        else
            return false;
    }
    bool p1=knap(i+1,x[i]+j,k);
    if(p1)
    {
        v.push_back(x[i]);
        return true;
    }
    bool p2=knap(i+1,j,k+y[i]);
    if(p2)
    {
        v.push_back(y[i]*-1);
        return true;
    }
    return false;
}
```


*problem 3.cpp - Code::Blocks 17.12
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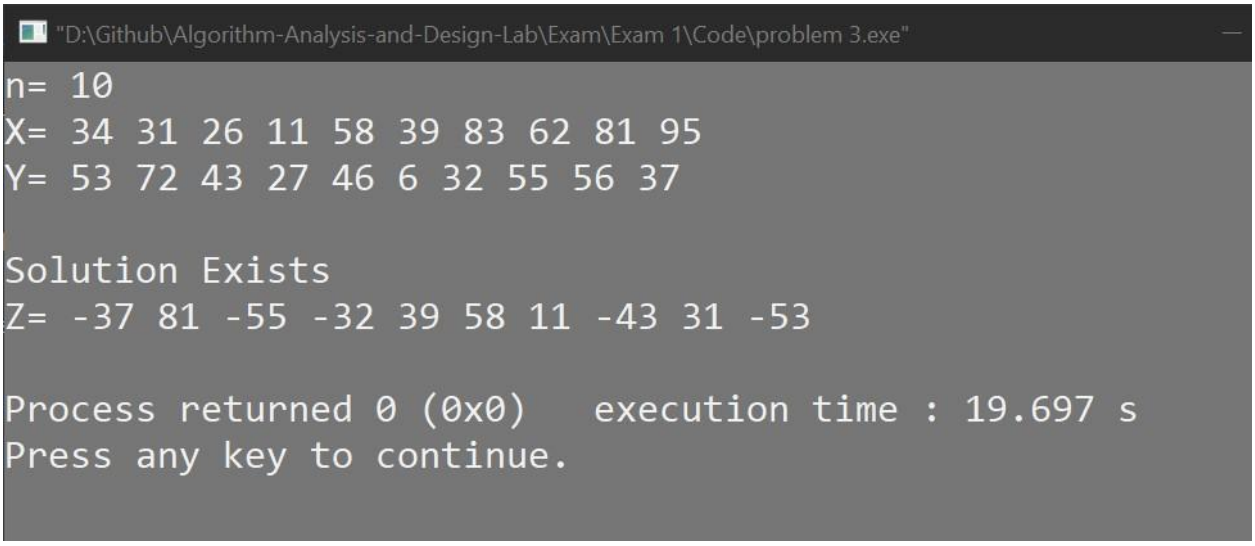
Start here
Problem 1.cpp
*problem 3.cpp
33
34 main()
35 {
36 int i,j,k,l,m;
37 cout<<"n= ";
38 cin>>n;
39 cout<<"X= ";
40 for(i=1; i<=n; i++)
41 cin>>x[i];
42 cout<<"Y= ";
43 for(i=1; i<=n; i++)
44 cin>>y[i];
45 if(knap(0,0,0))
46 {
47 cout<<"\nSolution Exists"<<endl;
48 cout<<"Z= ";
49 for(i=0; i<n; i++)
50 cout<<v[i]<<" ";
51 cout<<endl;
52
53 }
54 else
55 cout<<"NO"<<endl;
56
57
58
59 return 0;
60 }
61


"D:\Github\Algorithm-Analysis-and-Design-Lab\Exam\Exam 1\Code\problem 3.exe"
n= 10
X= 34 31 26 11 58 39 83 62 81 95
Y= 53 72 43 27 46 6 32 55 56 37
Solution Exists
Z= -37 81 -55 -32 39 58 11 -43 31 -53
Process returned 0 (0x0) execution time : 19.697 s
Press any key to continue.

THE END