

**CHANDIGARH UNIVERSITY
UNIVERSITY INSTITUTE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**



Submitted By: Vivek Kumar(21BCS8129)		Submitted To: Neha Dutta(E12830)	
Subject Name	Design and Analysis of Algorithm Lab		
Subject Code	20CSP-312		
Branch	Computer Science and Engineering		
Semester	5 th		

Experiment - 6

Student Name: Vivek Kumar

Branch: BE-CSE(LEET)

Semester: 5th

Subject Name: DAA Lab

UID: 21BCS8129

Section/Group: 20BCS-WM-616/A

Date of Performance: 10/10/2022

Subject Code: 20CSP-312

1. Aim/Overview of the practical:

To implement a subset-sum problem using the dynamic programming.

2. Task to be done/ Which logistics used:

Write a program to find the subset-sum problem using the dynamic programming.

3. Requirements (For programming-based labs):

- Laptop or PC.
- Operation system (Mac, Windows, Linux, or any)
- Vs-Code with MinGw or any C++ Compiler

4. Algorithm/Flowchart (For programming-based labs)

1. First, it will divide the matrix sequence into two subsequences.
2. You will find the minimum cost of multiplying out each subsequence.
3. You will add these costs together and in the price of multiplying the two result matrices.
4. These procedures will be repeated for every possible matrix split and calculate the minimum.

5. Steps for experiment/practical/Code:

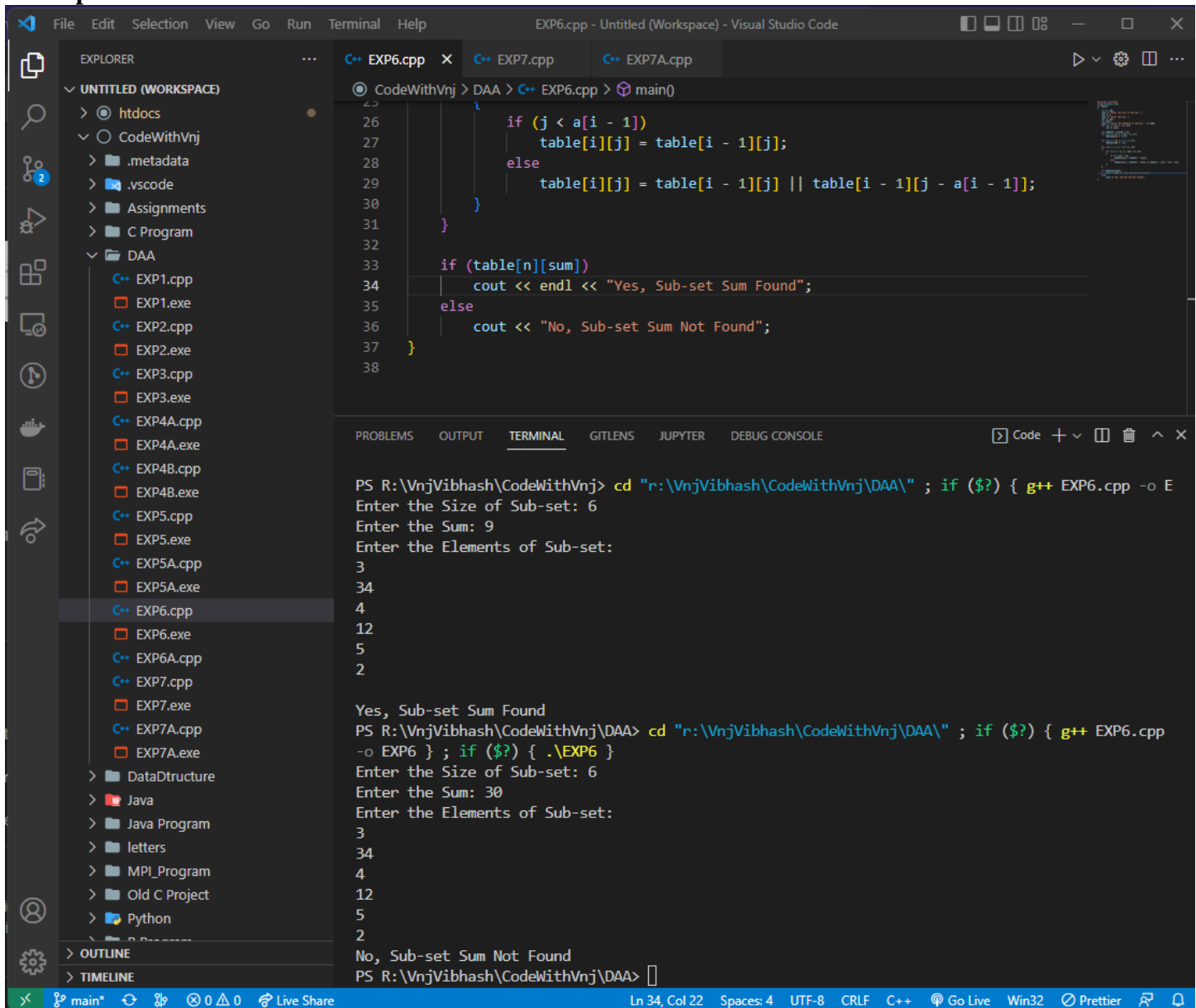
```
#include <iostream>
using namespace std;
int main()
{
    int n, sum;
    cin >> n >> sum;
    int a[n];
    for (int i = 0; i < n; i++)
        cin >> a[i];
    int table[n + 1][sum + 1];
    for (int i = 0; i < sum + 1; i++)
        table[0][i] = false;
    for (int i = 0; i < n + 1; i++)
        table[i][0] = true;
    for (int i = 1; i < n + 1; i++)
    {
        for (int j = 1; j < sum + 1; j++)
        {
            if (j < a[i - 1])
```

```

        table[i][j] = table[i - 1][j];
    else
        table[i][j] = table[i - 1][j] || table[i - 1][j - a[i - 1]];
    }
}
if (table[n][sum])
    cout << "Yes";
else
    cout << "No";
}

```

6. Output:



The screenshot shows the Visual Studio Code interface with the C++ code from the previous block open in the editor. The Explorer pane on the left shows the project structure, including the 'DAA' folder containing several C++ files. The Terminal pane at the bottom shows the execution of the program. The first run shows the program finding a sub-set sum for the given input. The second run shows the program finding no sub-set sum for the given input.

```

PS R:\VnjVibhash\CodeWithVnj> cd "r:\VnjVibhash\CodeWithVnj\DAA\" ; if ($?) { g++ EXP6.cpp -o EXP6 } ; if ($?) { .\EXP6 }
Enter the Size of Sub-set: 6
Enter the Elements of Sub-set:
3
34
4
12
5
2

Yes, Sub-set Sum Found
PS R:\VnjVibhash\CodeWithVnj\DAA> cd "r:\VnjVibhash\CodeWithVnj\DAA\" ; if ($?) { g++ EXP6.cpp -o EXP6 } ; if ($?) { .\EXP6 }
Enter the Size of Sub-set: 6
Enter the Elements of Sub-set:
3
34
4
12
5
2

No, Sub-set Sum Not Found
PS R:\VnjVibhash\CodeWithVnj\DAA>

```

Learning outcomes (What I have learnt):

1. How to solve the sub-set sum problem using dynamic programming.

Evaluation Grid (To be created per the faculty's SOP and Assessment guidelines):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Worksheet completion including writing learning objectives/Outcomes. (To be submitted at the end of the day).		
2.	Post-Lab Quiz Result.		
3.	Student Engagement in Simulation/Demonstration/Performance and Controls/Pre-Lab Questions.		
	Signature of Faculty (with Date):	Total Marks Obtained:	