**Experiment 6**

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**Branch:** CSE **Section/Group:** 702 A

**Semester:** 5th **Date of Performance:** 29/09/2022

**Subject Name:** DAA Lab **Subject Code:** 20-CSP-312

**1. Aim/Overview of the practical:**

To implement subset-sum problem using Dynamic Programming.

**2. Task to be done/ Which logistics used:**

To write code to implement subset-sum problem using Dynamic Programming.

**3. Algorithm/Flowchart (For programming based labs):**

**4. Steps for experiment/practical/Code:**

package com.DAA;

public class DAA\_exp6 {

static boolean isThereSubsetSum(int[] arr, int n, int sum) {

boolean[][] dp = new boolean[n + 1][sum + 1];

for (int i = 0; i <= n; i++)

dp[i][0] = true;

for (int i = 1; i <= sum; i++)

dp[0][i] = false;

for (int i = 1; i <= sum; i++) {

for (int j = 1; j <= n; j++) {

if (j < arr[i - 1])

dp[i][j] = dp[i - 1][j];

if (j >= arr[i - 1])

dp[i][j] = dp[i - 1][j] ||

dp[i - 1][j - arr[i - 1]];

}

}

return dp[n][sum];

}

public static void main(String[] args) {

int [] ar={2,1,5,4,7,8,9};

int n = ar.length;

int sum= 7;

if (*isThereSubsetSum*(ar, n, sum))

System.*out*.println("Found a subset with given sum i.e "+sum);

else

System.*out*.println("No subset with given sum i.e "+sum);

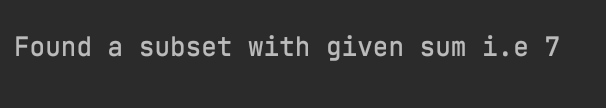
}

}

**5. Observations/Discussions/ Complexity Analysis:**

Time complexity is O(N x sum).

**6. Result/Output/Writing Summary:**

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**Learning outcomes (What I have learnt):**

**1. Learnt about dynamic programming.**

**2. Learnt how to make optimal algorithm.**

**3. Learnt about subset sum problem using dynamic programming.**

**4. Learnt about the implementation of dynamic programming.**

**5.**

**Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):**

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| --- | --- | --- | --- |
| Sr. No. | Parameters | Marks Obtained | Maximum Marks |
| 1. |  |  |  |
| 2. |  |  |  |
| 3. |  |  |  |
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