Experiment - 1.2

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Branch: AIML **Section/Group :** AIML-4B
Semester: 5th **Date:** 24/08/2022
Subject Name : Advance Programming Lab **Subject Code:** 20CSV-334_20AML-4

1.Aim/Overview of the Practical

A left rotation operation on a vector of size N shifts each of the array's elements 1 unit to the left. For example, if 2 left rotations are performed on array [1,2,3,4,5], then the array would become[3,4,5,1,2]. Given an vector of n integers and a number, d , perform d left rotations on the array. Then print the updated array as a single line of space-separated integers. Print a single line of n space-separated integers denoting the final state of the array after performing d left rotations

2.Task to be done

a. Take input from the user and store the element in an array.
b. Take input the number of rotation to be made.
c. Rotate array as per user input and display the output.

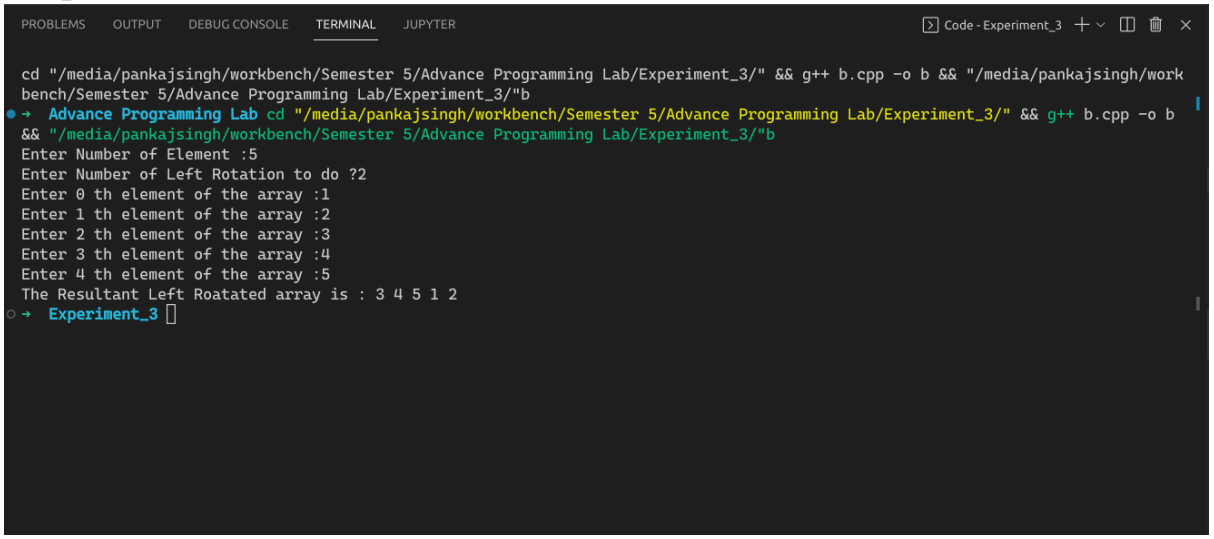
3. Program Code:

```
//rotate an array to its left
#include<bits/stdc++.h>
using namespace std;
std::vector<int> left_rotation(std::vector<int> & arr,int rotations)
{
    std::vector<int>rotated_array;
    int t = 0;
    if(rotations < arr.size())
    {
        t = rotations;
    }
    else{
        t = rotations%arr.size();
    }
```

```
    for(int i=t;i<arr.size();i++)
    {
        rotated_array.push_back(arr[i]);
    }

    for(int i=0;i<t;i++)
    {
        rotated_array.push_back(arr[i]);
    }
    return rotated_array;
}
int main()
{
    int num_elements, num_left_rotations;
    cout<<"Enter Number of Element :";
    std::cin>>num_elements;
    cout<<"Enter Number of Left Rotation to do ?";
    std::cin>>num_left_rotations;
    std::vector<int> input_arrary(num_elements);
    for(int i=0;i<num_elements;i++)
    {
        cout<<"Enter "<<i<<" th element of the array :";
        cin>>input_arrary[i];
    }
    vector<int> result = left_rotation(input_arrary,num_left_rotations);
    cout<<"The Resultant Left Roatated array is : ";
    for(int i=0;i<result.size();i++)
    {
        cout<<result[i]<<" ";
    }
    cout<<endl;
    return 0;
}
```

Output:



Oberstion and Discussion

- The Array will be rotated towards the left and the smaller index values will be shifted to the end of the array.
- If the rotation are greater than the size of the array then. We can simply get the new rotation value by number of rotations % size of the array as the rotation will repeat after the size of the array get crossed.
- In our program we have show the roated array at the last.

Result

We have successfully implemented and created the program and displayed the output after rotating the array as per the user input.

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

Sno.	Parameters	Obtained Marks	Maximum marks
1.			
2.			
3.			
4.			