LAB 4

1.Write a C program to reverse the elements of an array.

```
/*********************************************************************
//This program is developed by Aman Singh Rawat (221B056)
/*********************************************************************
#include <stdio.h>
#include <stdlib.h>

int main()
{
        int num, *arr, i;
        scanf("%d", &num);
        arr = (int*) malloc(num * sizeof(int));
        for(i = 0; i < num; i++) {
        scanf("%d", arr + i);
        }
        int rev_array[num];
        for (int i=num;i>=0;i--){
        rev_array[num-i]=arr[i];
        }

        for(i = 0; i < num-1; i++){
        printf("%d ", *(rev_array + i+1));
        }
        printf("%d", arr[0]);

        return 0;
}
```

2.Write a C program to print the frequency of the digits in given alphanumeric string.

```
/*********************************************************************
//This program is developed by Aman Singh Rawat (221B056)
/*********************************************************************
#include <stdio.h>
#include <string.h>
#include <math.h>
#include <stdlib.h>
```

```
int main() {
        int i, num[10] = {0};
        char s[1000];
        scanf("%s", s);
        for (i=0; i<strlen(s); i++) {
        if (s[i] - '0' >= 0 && s[i] - '0' <= 9) {
        num[s[i] - '0'] += 1;
        }
        }
        for (i=0; i<10; i++) {
        printf("%d ", num[i]);
        }

        return 0;
}
```

3.Write C program to complete "Students Marks Sum' as mentioned below:

```
/*****************************************************************
//This program is developed by Aman Singh Rawat (221B056)
*****************************************************************



//Complete the following function.

int marks_summation(int* marks, int number_of_students, char gender) {
  //Write your code here.
  int sum;
  for (int i=0;i<number_of_students;i++){

        if (gender=='b'){
        if (i%2==0){
                sum+=marks[i];
        }
        }else if (gender=='g'){
        if (i%2!=0){
                sum+=marks[i];
        }
        }

        }
```

```
    return sum;
}
```

4.Write a C/C++ program to left rotate an array of integers by d times.

```
/*************************************************************************
//This program is developed by Aman Singh Rawat (221B056)
/*************************************************************************
#include <bits/stdc++.h>

using namespace std;

string ltrim(const string &);
string rtrim(const string &);
vector<string> split(const string &);

vector<int> rotateLeft(int d, vector<int> arr) {
vector<int>b;
int n= arr.size();
for(int i=d;i<n;i++){
    b.push_back(arr[i]);
}
for(int i=0;i<d;i++){
    b.push_back(arr[i]);
}
return b;
}

int main()
{
    ofstream fout(getenv("OUTPUT_PATH"));

    string first_multiple_input_temp;
    getline(cin, first_multiple_input_temp);

    vector<string> first_multiple_input = split(rtrim(first_multiple_input_temp));

    int n = stoi(first_multiple_input[0]);
```

```
    int d = stoi(first_multiple_input[1]);

    string arr_temp_temp;
    getline(cin, arr_temp_temp);

    vector<string> arr_temp = split(rtrim(arr_temp_temp));

    vector<int> arr(n);

    for (int i = 0; i < n; i++) {
    int arr_item = stoi(arr_temp[i]);

    arr[i] = arr_item;
    }

    vector<int> result = rotateLeft(d, arr);

    for (size_t i = 0; i < result.size(); i++) {
    fout << result[i];

    if (i != result.size() - 1) {
    fout << " ";
    }
    }

    fout << "\n";

    fout.close();

    return 0;
}

string ltrim(const string &str) {
    string s(str);

    s.erase(
    s.begin(),
    find_if(s.begin(), s.end(), not1(ptr_fun<int, int>(isspace)))
    );
```

```
	return s;
}

string rtrim(const string &str) {
	string s(str);

	s.erase(
	find_if(s.rbegin(), s.rend(), not1(ptr_fun<int, int>(isspace))).base(),
	s.end()
	);

	return s;
}

vector<string> split(const string &str) {
	vector<string> tokens;

	string::size_type start = 0;
	string::size_type end = 0;

	while ((end = str.find(" ", start)) != string::npos) {
	tokens.push_back(str.substr(start, end - start));

	start = end + 1;
	}

	tokens.push_back(str.substr(start));

	return tokens;
}
```