Name: Ali Zeeshan Rauf

CMS: 467537

Section: ME-15(C)

Lab Task:

1. Take 10 integer inputs from user and store them in an array and print them on screen.

```cpp
#include <iostream>
using namespace std;
int main() {
    const int SIZE = 10;
    int numbers[SIZE];
    cout<<"Enter 10 integers:"<<endl;
    for (int i = 0; i < SIZE; ++i) {
        cout<<"Enter number "<<i+1<<": ";
        cin>>numbers[i];
    }
    cout<<"The numbers you entered are:"<<endl;
    for (int i=0;i<SIZE;++i) {
        cout<<numbers[i] << " ";
    }
    return 0;
}
```

Compile Result

```
Enter 10 integers:
Enter number 1: 1
Enter number 2: 4
Enter number 3: 3
Enter number 4: 5
Enter number 5: 7
Enter number 6: 8
Enter number 7: 9
Enter number 8: 5
Enter number 9: 0
```

2. Write a program to find the sum and product of all elements of an array with 5 integer elements.

```cpp
1 #include <iostream>
2 using namespace std;
3 int main(){
4     const int SIZE = 5;
5     int numbers[SIZE];
6     cout<<"Enter 5 integers:"<<endl;
7     for (int i = 0; i < SIZE; ++i) {
8         cout<<"Enter number "<<i+1<<": ";
9         cin>>numbers[i];
10    }
11    int sum = 0;
12    int product = 1;
13    for (int i=0;i<SIZE;++i) {
14        sum = sum+numbers[i];
15        product= product*numbers[i];
16    }
17    cout<<"The sum of the numbers is: "<<sum<<endl;
18    cout<<"The product of the numbers is: "<<product<<endl;
19    return 0;
20 }
```

Compile Result

```
Enter 5 integers:
Enter number 1: 8
Enter number 2: 3
Enter number 3: 4
Enter number 4: 5
Enter number 5: 2
The sum of the numbers is: 22
The product of the numbers is: 960

[Process completed - press Enter]
```

3. Print diamond pattern using a single array.

```cpp
1 #include <iostream>
2 using namespace std;
3 int main(){
4     const int SIZE = 5;
5     int diamond[SIZE][SIZE] = {0};
6     int midpoint =SIZE/2;
7     for (int i=0; i<=midpoint;++i) {
8         for (int j=0; j<SIZE;++j) {
9             if (j >= midpoint - i && j <= midpoint + i) {
10                 diamond[i][j] =i+1;
11             }
12         }
13     }
14     for (int i = midpoint+1; i<SIZE; ++i) {
15         for (int j=0; j<SIZE; ++j) {
16             if (j>=i-midpoint && j<SIZE-(i-midpoint)){
17                 diamond[i][j]=SIZE-i;
18             }
19         }
20     }
21     for (int i = 0; i < SIZE; ++i) {
22         for (int j = 0; j < SIZE; ++j) {
23             if (diamond[i][j] != 0) {
24                 cout<<diamond[i][j]<<" ";
25             } else {
26                 cout<<"  ";
27             }
28         }
29         cout<<endl;
30     }
31     return 0;
32 }
```

Compile Result

```
    1
  2 2 2
3 3 3 3 3
  2 2 2
    1

[Process completed - press Enter]
```