



National University of Science and  
technology  
(NUST)

**CS-114 - Fundamental of Programing**

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## **Lab Manual #06**

### **Lab Tasks**

1. **Generate the Fibonacci sequence using nested loops.**

### **Solution**

```
#include <iostream>
using namespace std;
int main() {
    int n,first = 0,second = 1,next;
    cout << "Enter the number of terms for Fibonacci sequence: ";
    cin >> n;
    cout << "Fibonacci sequence: ";
    for (int i = 0; i < n; ++i) {
        cout << first << " ";

        for (int j = 0; j < i; ++j) {
            next = first + second;
            first = second;
            second = next;
        }
    }

    return 0;
}
```

### **Output:**

```
C:\Users\ADMIN\OneDrive\Documents\L-6 T1.2.exe
Enter the number of terms for Fibonacci sequence: 4
Fibonacci sequence: 0 0 1 2
-----
Process exited after 1.529 seconds with return value 0
Press any key to continue . . .
```

## 2. Create Pascal's triangle with nested loops.

### Solution

```
#include <iostream>
using namespace std;
int main() {
    int n,number;
    cout << "Enter the number of rows for Pascal's triangle: ";
    cin >> n;
    for (int i = 0; i < n; ++i) {
        number = 1;
        for (int j = 0; j < n - i - 1; ++j) {
            cout << " ";
        }
        for (int j = 0; j <= i; ++j) {
            cout << " " << number;
            number = number * (i - j) / (j + 1);
        }
        cout << endl;
    }
    return 0;
}
```

## Output:

```
C:\Users\ADMIN\OneDrive\Documents\L-6 T-2.exe
Enter the number of rows for Pascal's triangle: 5
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1

-----
Process exited after 2.614 seconds with return value 0
Press any key to continue . . .
```

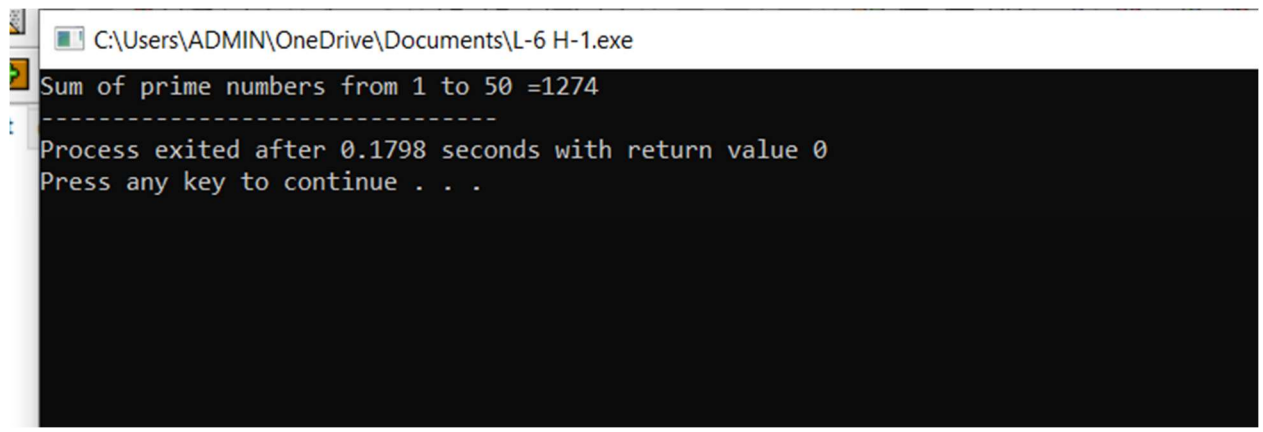
## Home Tasks

1. Write a program using break or continue statement that only adds prime numbers from 1 to 50 and display the sum on screen.

## Solution

```
#include <iostream>
using namespace std;
int main(){
    int res=0,check=0;
    for(int i=2;i<=50;i++){
        for(int j=1;j<i;j++){
            if(i%j==0){
                res=res+i;
                break;
            }
        }
    }
    cout<<"Sum of prime numbers from 1 to 50 ="<<res;
    return 0;
}
```

## Output:



```
C:\Users\ADMIN\OneDrive\Documents\L-6 H-1.exe
Sum of prime numbers from 1 to 50 =1274
-----
Process exited after 0.1798 seconds with return value 0
Press any key to continue . . .
```

**2. Write a program in C++ to create the following pattern.**

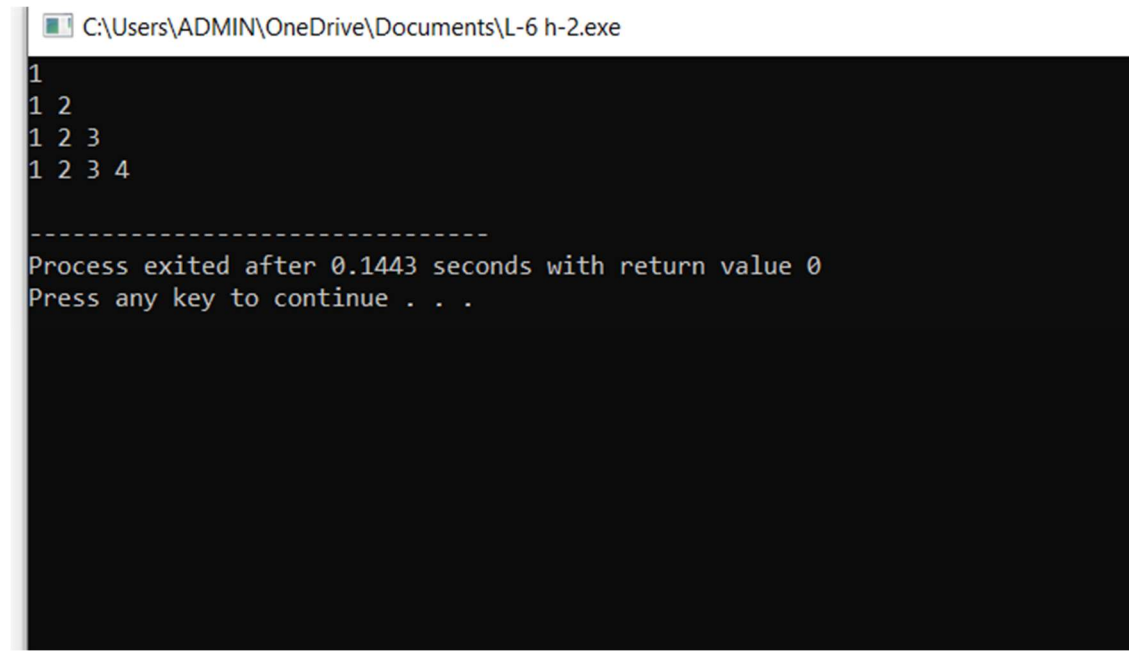
```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

### **Solution**

```
#include <iostream>
using namespace std;
int main() {
    for (int i = 1; i <= 4; ++i) {
        for (int j = 1; j <= i; ++j) {
            cout << j << " ";
        }
        cout << endl;
    }
    return 0;
```

}

### **Output:**



```
C:\Users\ADMIN\OneDrive\Documents\L-6 h-2.exe
1
1 2
1 2 3
1 2 3 4

-----
Process exited after 0.1443 seconds with return value 0
Press any key to continue . . .
```

**3. Write a C++ program to print:**

**1**

**2 2**

**4 4 4 4**

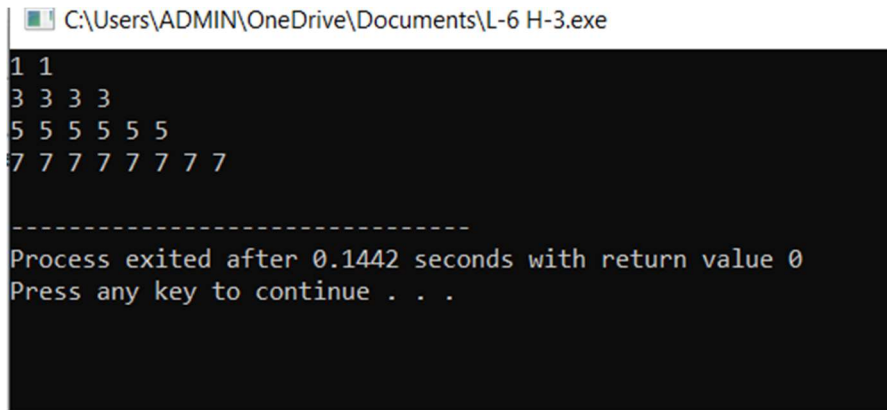
**6 6 6 6 6 6**

### **Solution**

```
#include <iostream>
using namespace std;
int main() {
    int count = 1;
    for (int i = 1; i <= 4; ++i) {
        for (int j = 1; j <= i * 2; ++j) {
            cout << count << " ";
        }
        count += 2;
    }
}
```

```
        cout << endl;  
    }  
    return 0;  
}
```

### **Output:**



```
C:\Users\ADMIN\OneDrive\Documents\L-6 H-3.exe  
1 1  
3 3 3 3  
5 5 5 5 5 5  
7 7 7 7 7 7 7 7  
-----  
Process exited after 0.1442 seconds with return value 0  
Press any key to continue . . .
```