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.**

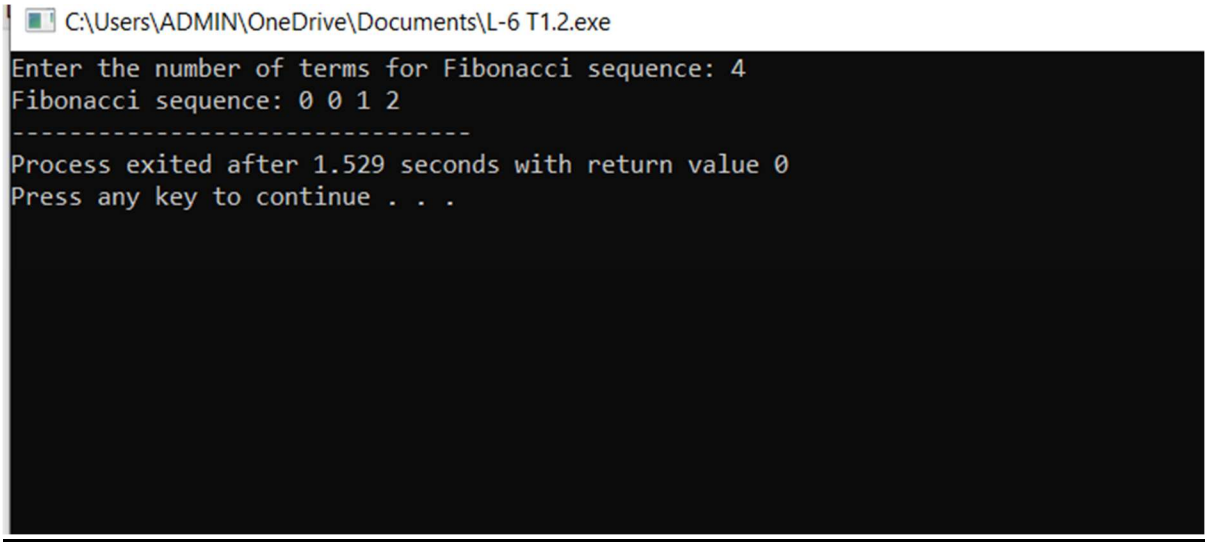
Solution

```
#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:

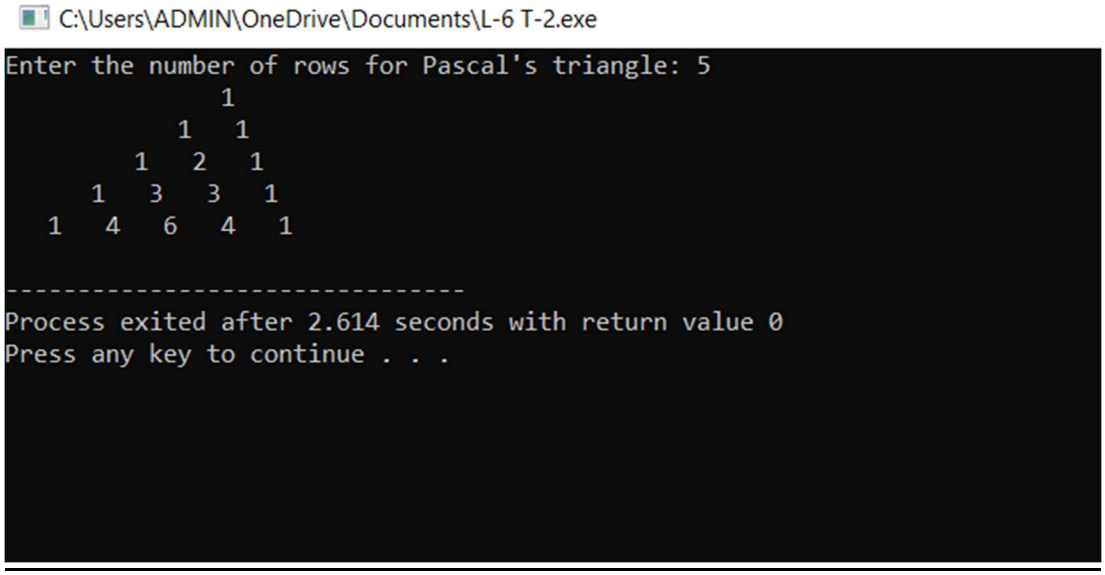


2. Create Pascal's triangle with nested loops.

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:



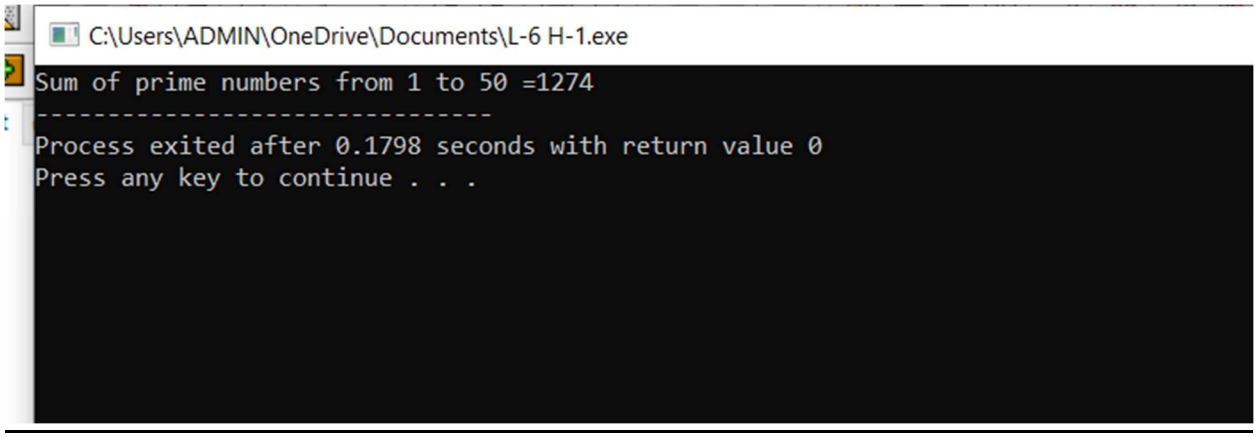
Home Tasks

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:



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

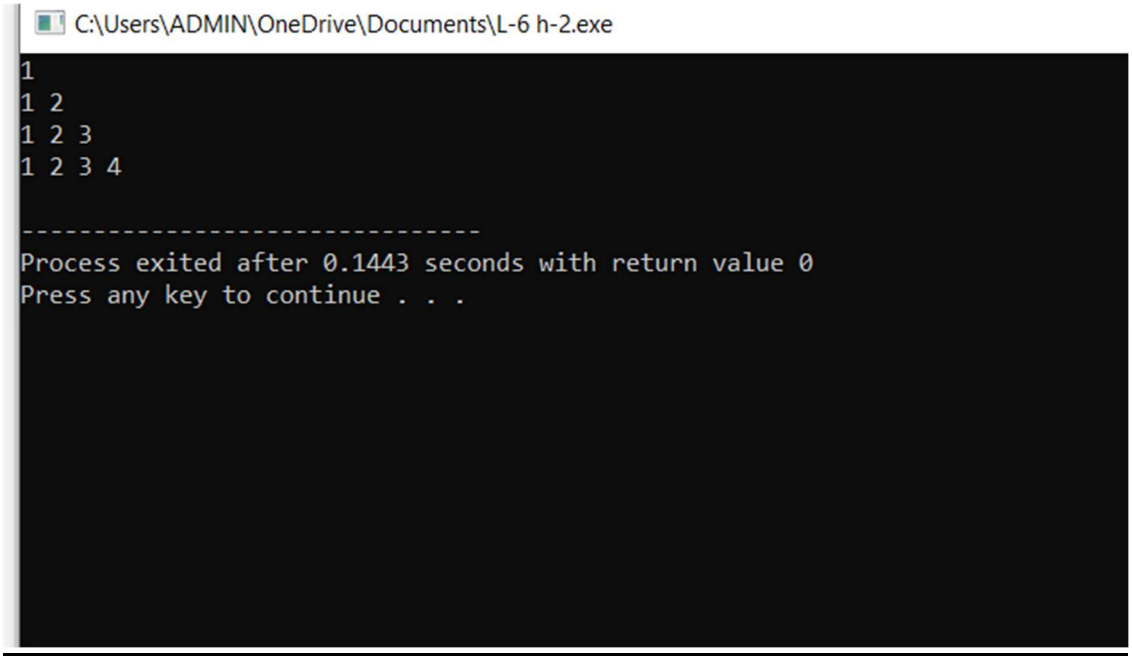
1
1 2
1 2 3
12 3 4
1 2 3 4 5

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:



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: