

## Lab Tasks

1)

```
#include <iostream>
using namespace std;
int main() {
    int a, t1 = 0, t2 = 1, nextTerm = 0;
    std::cout << "Enter the number of terms for the series: ";
    std::cin >> a;
    std::cout << "Fibonacci Series is ";
    for (int b = 1; b <= a; ++b) {
        if(b == 1) {
            std::cout << t1 << " ";
            continue; }
        if(b == 2) {
            std::cout << t2 << " ";
            continue;}
        nextTerm = t1 + t2;
        t1 = t2;
        t2 = nextTerm;
        std::cout << nextTerm << " ";}
    return 0;}
```



The screenshot shows a C++ IDE with a file named 'main.cpp'. The code is a program to generate the first 'a' terms of the Fibonacci series. It prompts the user to enter the number of terms, then prints the series. The output window shows the program's execution with the input '10' and the resulting series '0 1 1 2 3 5 8 13 21 34'.

```
main.cpp  [Run]  Output
1  #include <iostream>
2  using namespace std;
3  int main() {
4      int a, t1 = 0, t2 = 1, nextTerm = 0;
5      std::cout << "Enter the number of terms for the series: ";
6      std::cin >> a;
7      std::cout << "Fibonacci Series is ";
8      for (int b = 1; b <= a; ++b) {
9          if(b == 1) {
10             std::cout << t1 << " ";
11             continue; }
12         if(b == 2) {
13             std::cout << t2 << " ";
14             continue;}
15         nextTerm = t1 + t2;
16         t1 = t2;
17         t2 = nextTerm;
18         std::cout << nextTerm << " ";}
19     return 0;}
```

Output: /tmp/IoaXej4w7J.o  
Enter the number of terms for the series: 10  
Fibonacci Series is 0 1 1 2 3 5 8 13 21 34

**2)**

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

| main.cpp  | Output   |
|---|--|
| <pre>1 #include &lt;iostream&gt; 2 int main() { 3     int a; 4     std::cout &lt;&lt; "Enter the number of rows for Pascal's triangle: "; 5     std::cin &gt;&gt; a; 6     for (int i = 0; i &lt; a; ++i) { 7         int b = 1; 8         for (int c = 0; c &lt;= i; ++c) { 9             std::cout &lt;&lt; b &lt;&lt; " "; 10            b = b * (i - c) / (c + 1); 11        } 12        std::cout &lt;&lt; std::endl; 13    } 14    return 0; 15 }</pre> | <pre>/tmp/IoaXej4w7J.o Enter the number of rows for Pascal's triangle: 6 1 1 1 1 2 1 1 3 3 1 1 4 6 4 1 1 5 10 10 5 1</pre> |

## Home Tasks:

1)

```
#include <iostream>
bool isPrime(int a) {
    if (a <= 1)
        return false;
    for (int i = 2; i <= a / 2; ++i) {
        if (a % i == 0)
            return false;
    }
    return true;
}
int main() {
    int sum = 0;
    for (int i = 1; i <= 50; ++i) {
        if (!isPrime(i))
            continue;
        sum += i;
    }
    std::cout << "The sum of prime numbers from 1 to 50 is " << sum << std::endl;
    return 0;
}
```




The screenshot shows a C++ IDE with a dark theme. The left pane displays the source code for 'main.cpp', which is the same code as shown in the previous block. The right pane is titled 'Output' and shows the program's execution result. The output text is 'The sum of prime numbers from 1 to 50 is 328'. Above the output text, the compiler path '/tmp/IoaXej4w7J.o' is visible. The IDE interface includes a file explorer on the left, a toolbar with icons for file operations and a 'Run' button, and a status bar at the bottom.

```
main.cpp  [Icons]  Run  Output
1  #include <iostream>
2  bool isPrime(int a) {
3      if (a <= 1)
4          return false;
5      for (int i = 2; i <= a / 2; ++i) {
6          if (a % i == 0)
7              return false;
8      }
9      return true;
10 }
11 int main() {
12     int sum = 0;
13     for (int i = 1; i <= 50; ++i) {
14         if (!isPrime(i))
15             continue;
16         sum += i;
17     }
18 }
```

/tmp/IoaXej4w7J.o  
The sum of prime numbers from 1 to 50 is 328

2)

```
#include <iostream>
int main() {
    int a;
    std::cout << "Enter the number of rows: ";
    std::cin >> a;
    for (int b = 1; b <= a; ++b) {
        for (int c = 1; c <= b; ++c) {
            std::cout << c << " ";
        }
        std::cout << std::endl;
    }
    return 0;
}
```

| main.cpp   | Run  | Output   |
|--|--|--|
| <pre>1 #include &lt;iostream&gt; 2 int main() { 3     int a; 4     std::cout &lt;&lt; "Enter the number of rows: "; 5     std::cin &gt;&gt; a; 6     for (int b = 1; b &lt;= a; ++b) { 7         for (int c = 1; c &lt;= b; ++c) { 8             std::cout &lt;&lt; c &lt;&lt; " "; 9         } 10        std::cout &lt;&lt; std::endl; 11    } 12    return 0; 13 }</pre> |  | <pre>/tmp/IoaXej4w7J.o Enter the number of rows: 5 1 1 2 1 2 3 1 2 3 4 1 2 3 4 5</pre> |

3)

#include &lt;iostream&gt;

int main() {

int rows;

int num = 0;

std::cout &lt;&lt; "number of rows that you desire: ";

std::cin &gt;&gt; rows;

for (int i = 1; i &lt;= rows; ++i) {


for (int j = 1; j &lt;= i; ++j) {

std::cout &lt;&lt; num &lt;&lt; " "; }

num += 2;

std::cout &lt;&lt; std::endl;}

return 0;}

| main.cpp   | Run   | Output   |
|--|---|--|
| <pre>1 #include &lt;iostream&gt; 2 int main() { 3     int rows; 4     int num = 0; 5     std::cout &lt;&lt; "number of rows that you desire: "; 6     std::cin &gt;&gt; rows; 7     for (int i = 1; i &lt;= rows; ++i) { 8         for (int j = 1; j &lt;= i; ++j) { 9             std::cout &lt;&lt; num &lt;&lt; " "; 10            num += 2; 11            std::cout &lt;&lt; std::endl; 12        } 13    } 14    return 0; 15 }</pre> |  | <pre>/tmp/IoaXej4w7J.o number of rows that you desire: 4 0 2 2 4 4 4 6 6 6 6</pre> |