Reg. No: 21BCE1297 **Name: Vidhi Shah** **Date: 28/04/22**

PPS14

Q1

Aim:

Write a basic C++ program to generate Fibonacci series for ‘n’ numbers using inline functions.

Procedure:

Input:

Number of elements of Fibonacci Series, n

Output:

Fibonacci series of n elements

Algorithm:

Inline Fibonacci Function:

```
Step 1: Declare function as inline
Step 2: Initialise a, b, c. a=0, b=1
Step 3: Repeat steps 4 to 5 n times
Step 4: If i = 0 or i = 1 then print i
Step 5: Else
        Step A: c = a + b
        Step B: a = b
        Step C: b = c
        Step D: Print c
```

Main Function:

```
Step 1: Read n
Step 2: Call Inline Fibonacci function
Step 3: Return 0
```

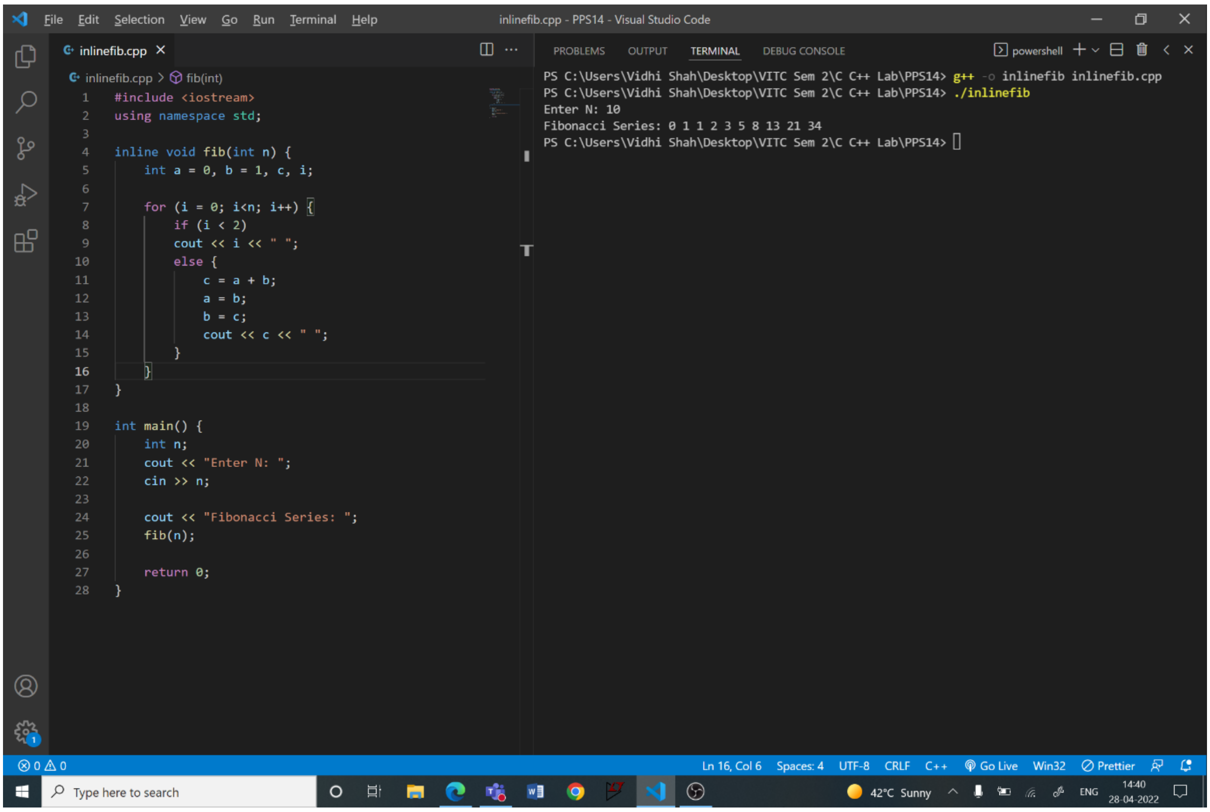
Code:

```
#include <iostream>
using namespace std;

inline void fib(int n) {
    int a = 0, b = 1, c, i;
    for (i = 0; i<n; i++) {
        if (i < 2)
        cout << i << " ";
        else {
            c = a + b;
            a = b;
            b = c;
            cout << c << " ";
        } } }

int main() {
    int n;
    cout << "Enter N: ";
    cin >> n;
    cout << "Fibonacci Series: ";
    fib(n);
    return 0;}
```

Output:


File Edit Selection View Go Run Terminal Help
inlinefib.cpp - PPS14 - Visual Studio Code
inlinefib.cpp
inlinefib.cpp > fib(int)
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE
powershell
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```
#include <iostream>
using namespace std;

inline void fib(int n) {
    int a = 0, b = 1, c, i;

    for (i = 0; i<n; i++) {
        if (i < 2)
        cout << i << " ";
        else {
            c = a + b;
            a = b;
            b = c;
            cout << c << " ";
        }
    }
}

int main() {
    int n;
    cout << "Enter N: ";
    cin >> n;

    cout << "Fibonacci Series: ";
    fib(n);

    return 0;
}
```

```
PS C:\Users\Vidhi Shah\Desktop\VITC Sem 2\C C++ Lab\PPS14> g++ -o inlinefib inlinefib.cpp
PS C:\Users\Vidhi Shah\Desktop\VITC Sem 2\C C++ Lab\PPS14> ./inlinefib
Enter N: 10
Fibonacci Series: 0 1 1 2 3 5 8 13 21 34
PS C:\Users\Vidhi Shah\Desktop\VITC Sem 2\C C++ Lab\PPS14> 
```

Q2

Aim:

Create a class named 'Rectangle' with two data members- length and breadth and a function to calculate the area which is 'length*breadth'. The class has three constructors which are:
1 - having no parameter - values of both length and breadth are assigned zero.
2 - having two numbers as parameters - the two numbers are assigned as length and breadth respectively.
3 - having one number as parameter - both length and breadth are assigned that number.
Now, create objects of the 'Rectangle' class having none, one and two parameters and print their areas

Procedure:

Input:

Length or breadth of the rectangle or void input

Output:

Area

Algorithm:

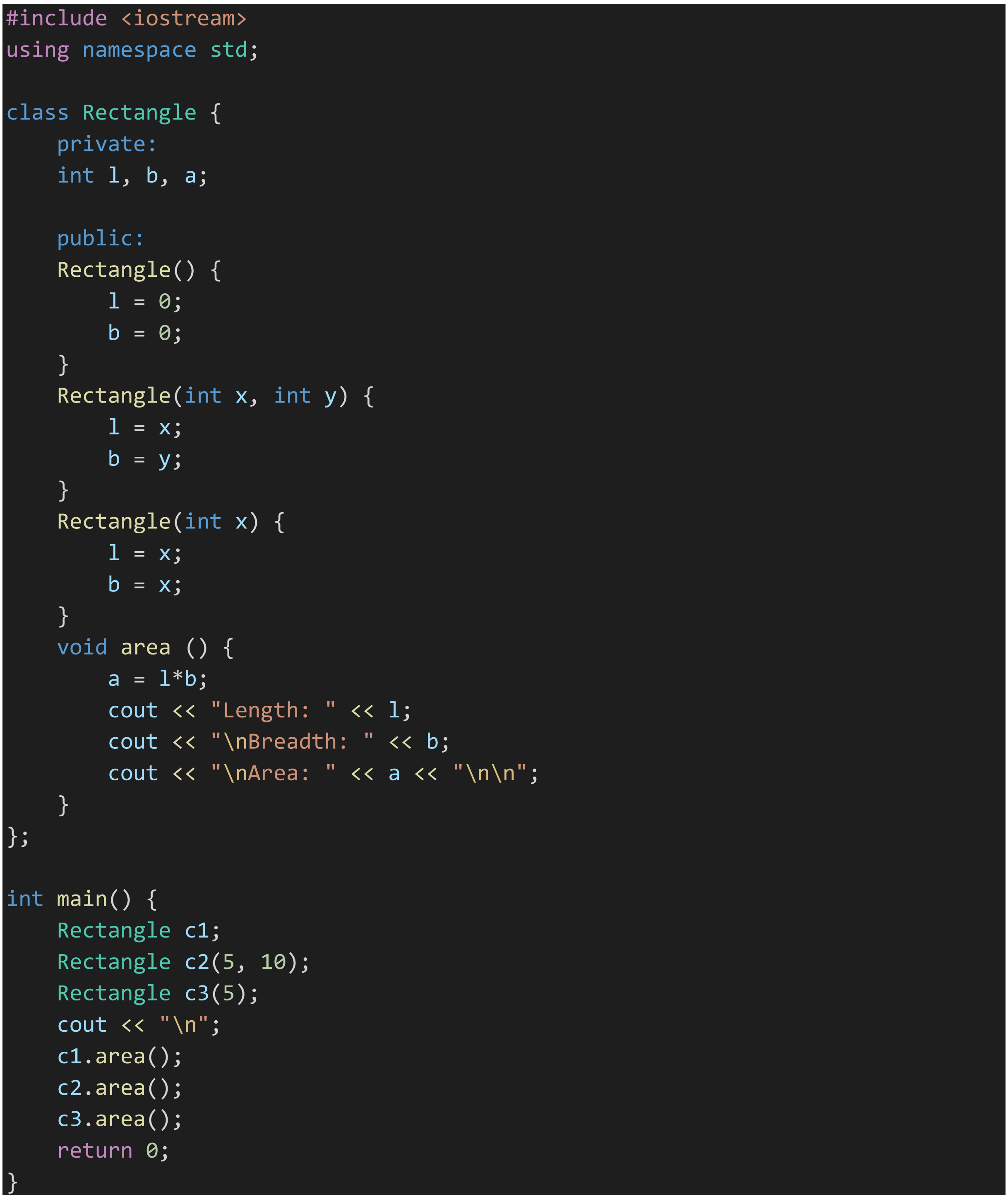
Class Rectangle:

```
Step 1: Create a class Rectangle
Step 2: Add private data members, length, breadth and area
Step 3: Add public constructs for:
        1. No parameters: length = 0, breadth = 0
        2. 2 parameters (x, y):  length = x, breadth = y
        3. 1 parameter (x): length = x, breadth = x
Step 4: Add public member function
        1. Area: Calculate and print area
```

Main Function:

```
Step 1: Create 3 objects from class rectangle, with no parameter, 1 parameter
        and 2 parameters respectively
Step 2: Call the area function for 3 objects
Step 3: Return 0
```

Code:



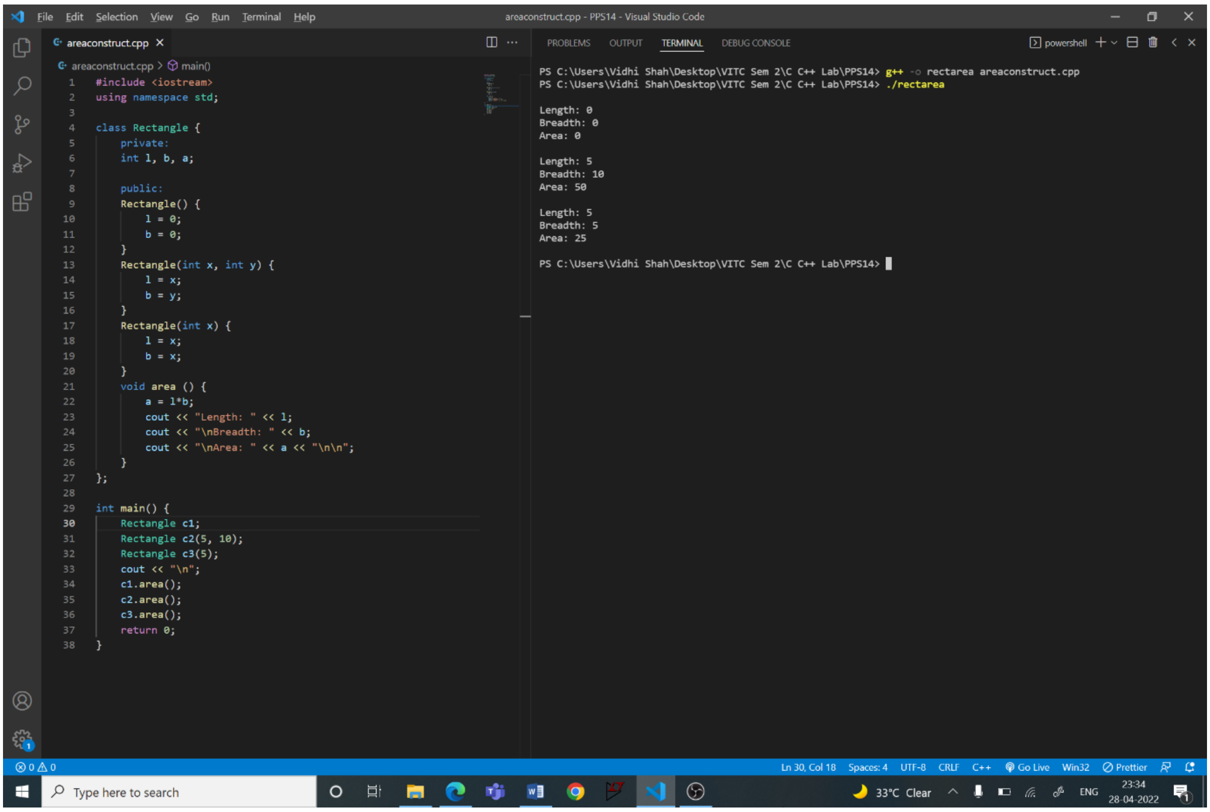
```cpp
#include <iostream>
using namespace std;

class Rectangle {
    private:
    int l, b, a;

    public:
    Rectangle() {
        l = 0;
        b = 0;
    }
    Rectangle(int x, int y) {
        l = x;
        b = y;
    }
    Rectangle(int x) {
        l = x;
        b = x;
    }
    void area () {
        a = l*b;
        cout << "Length: " << l;
        cout << "\nBreadth: " << b;
        cout << "\nArea: " << a << "\n\n";
    }
};

int main() {
    Rectangle c1;
    Rectangle c2(5, 10);
    Rectangle c3(5);
    cout << "\n";
    c1.area();
    c2.area();
    c3.area();
    return 0;
}
```

Output:



File Edit Selection View Go Run Terminal Help
areaconstruct.cpp - PPS14 - Visual Studio Code
areaconstruct.cpp
areaconstruct.cpp > main()
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE
powershell
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23:34
28-04-2022

```cpp
#include <iostream>
using namespace std;

class Rectangle {
    private:
    int l, b, a;

    public:
    Rectangle() {
        l = 0;
        b = 0;
    }
    Rectangle(int x, int y) {
        l = x;
        b = y;
    }
    Rectangle(int x) {
        l = x;
        b = x;
    }
    void area () {
        a = l*b;
        cout << "Length: " << l;
        cout << "\nBreadth: " << b;
        cout << "\nArea: " << a << "\n\n";
    }
};

int main() {
    Rectangle c1;
    Rectangle c2(5, 10);
    Rectangle c3(5);
    cout << "\n";
    c1.area();
    c2.area();
    c3.area();
    return 0;
}
```

```
PS C:\Users\Vidhi Shah\Desktop\VITC Sem 2\C C++ Lab\PPS14> g++ -o rectarea areaconstruct.cpp
PS C:\Users\Vidhi Shah\Desktop\VITC Sem 2\C C++ Lab\PPS14> ./rectarea

Length: 0
Breadth: 0
Area: 0

Length: 5
Breadth: 10
Area: 50

Length: 5
Breadth: 5
Area: 25

PS C:\Users\Vidhi Shah\Desktop\VITC Sem 2\C C++ Lab\PPS14>
```