

C++ Functions and Data Types

For the code to the right:

1. Add comments to identify the Base Case in this recursive function.
2. Add a comment to identify the Recursive Step in this recursive function.
3. Add a comment on every line explaining what the C++ code is doing.
4. What is the output?
5. What is a C++ lambda expression?
6. What is a C++ smart pointer?

```
#include <iostream> // library header for input and output
using namespace std; // allows use of cout without std::

int fib(int n) // fib function definition
{
    if (n == 0) // base case } 1.
        return 0; // gives 0 back
    if (n == 1) // base case
        return 1; // gives 1 back
    return (fib(n - 1) + fib(n - 2)); // recursive step } 2.
} // end fib function

int main() // main function definition
{
    int n = 5; // initialize integer n with value 5
    for (int i = 0; i < n; i++) // loop from 0 to n-1
        cout << fib(i) << " "; // prints the fibonacci number at every i
    return 0;
} // end main
```

4.

0

1

1

2

3

5. A lambda function is a small function that can be declared inside your code and inside other functions without having to give it a name

6. A pointer that manages its own memory which takes care of deleting memory when you are done with it and prevents memory leaks