Deducing Function Title Lines from Context in Main

Example 1:

```c
int main(){
    string name = "John";
    char initial = 'Q';
    int age = 20;
    double rating = doSomething(name, initial, name, age, age + 10);
    cout << rating << endl;
    return 0;
}
```

Question: What is the title line for function doSomething()?

To determine this, ask the following about the function:

1. What type of answer does it calculate?
2. How many parameters does it use?
3. What are the types of those parameters?

In the case of doSomething(),

1. The result of this function call is stored in variable rating, which is of type double.
2. Count the number of inputs. Alternatively, count the number of commas and add 1.
3. The data type of each parameter can be gleaned from the code in main. Variables name, initial and age are declared in main. age + 10 is an int added to an int, which must produce an int.

Given all of this, the function title line is

```c
double doSomething(string a, char b, string c, int d, int e)
```
Example 2:

```c
int main(){
    bool b=true; int i=1; double d=0; string s=""; char c='1';
    cout << function(function(b, s, c), "Hello", c) << endl;
    return 0;
}
```

Question: What is the title line for function function()?

1. What type of answer does it calculate?
2. How many parameters does it use?
3. What are the types of those parameters?

This problem is a little more complicated, as we have function() nested as an argument to an outer call to function.

```
function(function(b, s, c), "Hello", c)
```

The key here is to work from the inside out.

Answer questions 2 and 3 for function(b, s, c)

- There are three parameters
- The data type of each parameter: a bool, a string, and a char

Looking at the outer function call, we have:

```
function(function(b, s, c), "Hello", c)
```

function(b, s, c) is in the position of the first argument to the outer function call. Because bool is the data type of the argument in the first position, function must return a bool.

The title line for function() therefore is:

```
bool function(bool a, string s, char c)
```