

PIC 10A 1C. Week 2b Problems. TA: Eric Kim

1. Spot the Error

Louis Reasoner is trying to write a program, but there are some issues. Identify the mistakes, and fix them.

Desired Output:

```
The falling leaves...
```

Louis' Code:

```
include iostream

int main() [
    / displays "The falling leaves..." to the screen

    cout << "The falling"

    cout << "leaves..."

    return "goodbye!";
]
```

2. Code Jeopardy

Write C++ code that, when run, outputs the desired output.

Assume that we are using the standard namespace (using namespace std;), and that the iostream library is included (#include <iostream>).

Example:

Desired Output:

```
Hello World!
```

C++ Code (you fill this in):

```
cout << "Hello World!";
```

2.a.

Desired Output:

```
For You, "Blue"
```

C++ Code (you fill this in):

2.b.

Desired Output:

```
Throw the \m/ horns!
```

C++ Code (you fill this in):

2.c.

Desired Output:

```
A newline \n  
does that!
```

C++ Code (you fill this in):

2.d. Desired Output:

```
He "said", but 'she' said.
```

C++ Code (you fill this in):

3. To truly understand, one must become the compiler...

For each code fragment, write what the output is. If it crashes, explain why it crashes.

Assume that we are using the standard namespace, and that the iostream library is included.

3.a.

```
cout << "T" << "h" << "e" << " 'best";
```

Output:

3.b.

```
cout << "a bird \nest/";
```

Output:

3.c.

```
cout << "To be, or to " " be " .";
```

Output:

3.d.

```
cout << "To be, or to " " be " " .";
```

Output:

3.e.

```
cout << "There are " << "44+55" << " red balloons.";
```

Output:

3.f.

```
cout << "w" << endl << "a\n" << "t" << "endl" << "!";
```

Output:

3.g.

```
cout << "" << "" << "";  
cout << "\\\\" << "///";
```

Output:

4. Bases loaded!

Complete the following table, converting to/from binary/decimal as needed. The first row has been completed for you.

Decimal (Base 10)	Binary (Base 2)
3	0011
2	
	1000
15	
	1001
	0111

5. ints, doubles, long longs, oh my!

Determine the values of each variable in the following code. The first line is done for you.

```
int m1 = 10;           // m1 is: 10
long long m2 = 21;    // m2 is:
double m3 = m1 + m2;  // m3 is:
int a = 2;            // a is:
long long m4 = m3 / a; // m4 is:
double m5 = m3 / a;   // m5 is:
double m6 = 31 / 2;   // m6 is:
int b = m1 + m2;      // b is:
double c = 2;         // c is:
double m7 = b / a;    // m7 is:
double m8 = b / c;    // m8 is:
```

6. From source to executable: A source file's compilation journey

Recall that a source file (ie .cpp file) is transformed into an executable via a series of steps: the preprocessor, the compiler, the assembler, and finally the linker.

For each component of the compilation process, describe the inputs and outputs, and briefly describe what each component does.

Preprocessor
Compiler
Assembler
Linker