CECS 282 - Lab 2

Reading

Reading from *C++ How to Program*:

1. Chapter 1.6, 1.9
2. *Skim* Chapter 2.2, 2.3, 2.5, 2.6, 2.7
3. *Skim* Chapter 4 and 5 *if you need the review*
4. *Skim* Chapter 6.1 and 6.2
5. *Review* Figure 6.2 in Chapter 6.3
6. Chapter 6.4
7. Chapter 6.6 (don't need to memorize, just a good reference)
8. Chapter 6.18
9. Important: Chapter 8.1, 8.2, 8.3, 8.4
10. Skim Chapter 6.10
11. Chapter 6.13

Assignment

1. The following code does not compile, citing an error of "identifier Funk is undefined." Show/explain with code how to resolve the compile-time error.

```
int main() {
   // call Funk #49
   Funk(49);
}

void Funk(int f) {
   f = f * 2;
}
```

2. Write a C++ function `RoundToNearest`, which takes a positive `double` parameter and returns the integer nearest that double by rounding it. (Example: `RoundToNearest(6.4) = 6, RoundToNearest(6.5) = 7`.) Write your function using **only a single line of code in the function body**, and **without** using any rounding functions from the C++ standard library. (Your code should not call any functions at all and should consist entirely of arithmetic.)

3. Ada downloads the file `doors.h` from the Lecture 2 and saves it to her Desktop on her Windows PC. She then sets up a C++ project in Visual Studio and notes that Visual Studio saved the project on her hard drive at the location `C:\AdaProjects\Question6`. She adds `doors.h` to her project by using the "Add Existing Item" option in Visual Studio; this option references the file `doors.h` in the project, but **does not copy it** to the project folder.

   She adds a new file to the project called `main.cpp`, and notes that Visual Studio puts the new file in the folder `C:\AdaProjects\Question3`. She writes this code in `main.cpp`:

```
#include <iostream>
#include "doors.h"

int main(int argc, char* argv[]) {
   // call function from doors.h
   int p = getPrizeDoor();
}
```

When Ada compiles her file, she gets the following error message: `Could not open include file: doors.h': No such file or directory`

(a) Where is the compiler looking for the file `iostream`? (You may need to research this.)

(b) Where is the compiler looking for the file `doors.h`?

(c) Why can't the compiler locate `doors.h`?

(d) What's the moral of the story here?

4. In the program below, identify the order that each variable enters automatic storage when the program executes. Also identify the line of code in which each variable is removed from automatic storage.

```
void test(int x) {
    int a = x;
    if (a > 0) {
        int b = a;
        b++;
    }
}

int main() {
    int x = 100;
    test(x);
    int y = 8;
}
```

5. In the following code fragment:

```
int a = 9;
int b = a;
int *c = &a;
int *d = c;
int e = *c;
```

How many instances of the `int` type exist in memory? Draw a picture of automatic storage for these variables.

How to Get Credit

Show me your answers to each question.