

CSCI 1300 – First Exam Review

The first exam will be all multiple choice questions. You may not use any notes, books, electronic devices or other resources. I'm sorry, but because the class is so large, we won't be able to answer any questions during the exam.

Many of the questions will include part of a program, and you will need to determine the behavior of that program. Please assume that each program uses the standard namespace and has the include directives that it needs. There may also be questions on the homework, lecture material, and assigned reading.

This review sheet is to show you a few questions of the sort that you'll be expected to answer. In addition to knowing the answers to these questions, you must understand how the answers are found so that you can work similar problems during the actual exam.

Study hard!

Questions on Arithmetic Expressions

What is the value of `4 % 10` in C++?

Suppose that `x` is an `int` with a value of 4. What is `x / 10` in C++?

Suppose that `x` is a `double` with a value of 4. What is `x / 10` in C++?

Which operation (the `+` or the `*`) is done first in `x + y*z`?

How can you rewrite that expression so that the other operation occurs first?

In C++, What is the value of the arithmetic expression `6+6/2*3`

Questions on Variables and Ways to Change Their Values

What is the difference between `x=10` and `x==10` in C++?

What are the final values of `j` and `k` after these statements?

```
int j = 5;
int k = 6;
k = j + k;
k = k + j;
```

Questions on Input and Output

I have an `int` variable called `weight`. Write an output statement that prints the value of this variable along with a message that says it is the weight of King Kong. Use `endl` as part of your statement.

Questions on Void Functions

Which of these statements (if either) in C++ might be calling a void function?

```
cout << tom(42) << endl; // First statement
x = 1 + jerry(42.8); // Second statement
```

Describe the difference between three following terms: function prototype, function definition and function call. Which one do you need to look at if you are planning to call the function and need to know about its parameters? Which one will you write if you have the responsibility of implementing the function?

Questions on Non-Void Functions

Here is a function definition and a code fragment. What is the value of the result?

```
int exam(int a, int b)
{
    return a - b;
}

int main( )
{
    int a = 10;
    int b = 8;
    int result;

    result = exam(b, a); // Notice that b is first and a is second
}
```

What value of b does this program print?

```
int foo(int number)
{
    return number + 1;
}
int main( )
{
    int b = 1;
    int number = 2;
    b = foo(number);
    cout << b;
}
```

What value does this program print? The only difference from the last question is that this program prints number instead of b.

```
int foo(int number)
{
    return number + 1;
}
int main( )
{
    int b = 1;
    int number = 2;
    b = foo(number);
    cout << number;
}
```

Questions on Converting Between Types

Write a definition for a function that has two arguments (x, y) of type int and returns x times the square root of y. The value returned by this function should be of type double. Explain how and why the returned value changes if you change this function so that it returns an int instead of a double.

Questions on While Loops

What are the final values of j and k after these statements?

```
int j = 0;
int k = 0;
while (j < 4)
{
    k += j;
    ++j;
}
```

How many lines will this code print? Notice that i is an int.

```
int i = 10;
while (i > 0)
{
    cout << i << endl;
    i = i/2;
}
```

Questions on Boolean Expressions

Here is a Boolean expression using int variables: `((x >= y) && (y <= x))`
Rewrite it as a simpler, equivalent Boolean expression.

Suppose I have two Boolean expressions that I'll call α and δ . When is $(\alpha \ \&\& \ \delta)$ true? When is $(\alpha \ || \ \delta)$ true? When is $(!(\alpha \ \&\& \ \delta))$ true?

Questions on Branching

What will this code fragment print?

```
if (2 < 3 && 9 < 8)
{
    cout << "Beam me up. ";
}
else
{
    cout << "Scotty. ";
}
cout << "Engage."
```

Questions on the Homework

How many parameters did your function have to draw a star in Homework 1, and what were the purposes of those parameters?

Questions on the Debugger

What is the difference between "next" and "step" in GDB?