

Exam 1 Review

Lecture 5



Outline

1. Format
2. Content
3. Review Exercises



Format

- The exam will be 5-6 problems, with some problems having multiple sub-questions
- You are allowed a single 8.5x11" piece of paper with whatever notes you want on it
 - Can be handwritten or computer printed
 - You may use both the front and back
- No calculators, books, laptops, phones, or anything besides your single page of notes may be used



Kinds of Questions to Expect

- Explain a program or part of a program
- Translate between "normal" math expressions and their C++ equivalents
- Write your own code
- Fix incorrect code / find bugs in code
- Fill in the blank (in a program)
- Short answer



Content

Essentially, everything we've covered so far in the semester, including:

- Basic computer layout and components
- Compilers and linkers
- Variables / data types
- Input and output (**cin** and **cout**)
- Mathematical expressions in C++
 - Order of operations, integer division, etc.
- **if-else** statements



Review Exercises

- The following slides contain exercises that will help you prepare for the exam
- The exercises give you an idea of the style of questions to expect as well as the complexity



Exercise 1

Convert the following mathematical expressions into their C++ equivalents

$$3xyz$$

$$\frac{11z}{2(x-3y^2)}$$

$$y + z - 2 \leq 3x \leq 5yz$$



Answer 1

$$3xyz$$
$$3 * x * y * z$$
$$\frac{11z}{2(x-3y^2)}$$
$$(11*z) / (2*(x - 3*y*y))$$
$$y + z - 2 \leq 3x \leq 5yz$$
$$(y+z-2 \leq 3*x) \&\& (3*x \leq 5*y*z)$$


Exercise 2

What is the output of the following program fragment?

```
int some_value = 99/100 + 4 + 5/2;  
cout << some_value << endl;
```



Answer 2

6



Exercise 3

What is the output of the following program fragment?

```
double num = 3.75;
if ( num <= 0 )
{
    cout << "Less than 0!" << endl;
}
else if ( num >= 1 )
{
    cout << "Greater than 1!" << endl;
}
else if ( num == 3.75 )
{
    cout << "Equal to 3.75!" << endl;
}
else
{
    cout << "Umm... something?" << endl;
}
```



Answer 3

Greater than 1!



Exercise 4

What is the output of the following program fragment?

```
double num = 3.75;
if ( num <= 0 )
{
    cout << "Less than 0!" << endl;
}
if ( num >= 1 )
{
    cout << "Greater than 1!" << endl;
}
if ( num == 3.75 )
{
    cout << "Equal to 3.75!" << endl;
}
else
{
    cout << "Umm... something?" << endl;
}
```



Answer 4

Greater than 1!

Equal to 3.75!



Exercise 5

What is the value of x at the end of the program fragment below?

```
double x = 14 % 11 * 3 / 2;
```



Answer 5

4



Exercise 6

What is the value of x at the end of the program fragment below?

```
double x = 14.0 / 4 * 3 / 2;
```



Answer 6

5.25



Exercise 7

Find all errors in the C++ program below.

```
#include <string>
using namespace STD;

double main
{
    int input;
    cout << "Enter an integer between 1 and 5: ";
    cin << input;

    if ( input < 0 && input > 5 )
    {
        cout << "That is not between 1 and 5!" << endl
    }
    else if ( input = 1 )
    {
        cout << "OK";
    }
    else (input > 1)
    {
        cout << "GREAT";
    }
}
```



Answer 7

iostream

std
(C++ is case-sensitive)

main returns
type int

```
#include <string>
using namespace STD;
```

```
double main
{
```

()

```
int input;
cout << "Enter an integer between 1 and 5: ";
cin << input;
```

cin >>

```
if ( input < 0 && input > 5 )
{
    cout << "That is not between 1 and 5!" << endl
}
```

|| (or)

```
else if ( input = 1 )
{
    cout << "OK";
}
```

==

;

No else
condition!

```
else (input > 1)
{
    cout << "GREAT";
}
```

return 0;

```
}
```



Exercise 8

Write a complete C++ program that reads in three numbers from the user and prints out the maximum (largest) of the three.



Answer 8

```
#include <iostream>
using namespace std;

int main()
{
    double num1, num2, num3;
    double max;
    cout << "Enter three numbers: ";
    cin >> num1 >> num2 >> num3;
    if ( num1 >= num2 && num1 >= num3 )
    {
        max = num1;
    }
    else if ( num2 >= num3 )
    {
        max = num2;
    }
    else
    {
        max = num3;
    }
    cout << "The max was " << max << endl;
    return 0;
}
```



Wrap Up

- Review the previous slides and labs
- Work through all the examples and exercises
- Check the book if you have it for additional exercises
- Use the page of notes as a study guide to help you prepare for the exam
- Come see me with any questions or if you need some help understanding anything we've covered so far this semester

