

Test 2 Review

CS 1428
Spring 2020

Jill Seaman

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Test 2

- Thursday March 12
- In class, closed book, closed notes, clean desk
- 15% of your final grade
- 60 minutes to complete it
- Bring your ID card!!!!
- Bring a pencil! (and eraser)
- NO: calculators or cell phones.
- NO: headphones/earbuds.

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Test Format

- 100 Points total
 - ▶ 50 points: 16 multiple choice (scantron form)
 - ▶ 50 points: writing code on the test paper
 - ➡ program and/or individual statements
- Tasks:
 - ▶ Tracing code (what is the output)
 - ▶ Evaluating C++ expressions (relational/logical expressions)
 - ▶ Demonstrate general knowledge about C++ and programming
 - ▶ Programming (NOT graded for style!)

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Content from Textbook/REVEL

Units 3 and 4:

- Chapter 4: 4.1-6, 4.8-12, 4.14-15
- Chapter 5: 5.1-12 (including File I/O)

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Content from Slides

Units 3 and 4:

- Unit 2: File I/O
- Unit 3: If/else & switch
- Unit 4: Loops

These are on the class website in PDF form

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Ifs and boolean expressions

- Relational and Logical Expressions
 - ▶ Rel. Operators: < <= > >= == !=
 - ▶ Logical Operators: ! && ||
 - ▶ Precedence rules, parens
- if statements:
 - ▶ if
 - ▶ if-else
 - ▶ nested if statements
 - ▶ if-else if
 - ▶ block or compound statement

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Switch Statements and programming with conditions

- Input validation, checking ranges
- The switch statement
 - ▶ the break statement
 - ▶ switch case fall-through,
 - ▶ multiple labels
- Scope of variables in blocks

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Loops

- while loop
 - ▶ general purpose
- do-while
 - ▶ body always done once
 - ▶ good for menus, repeating a process
- for loop
 - ▶ init; test; update
- Which loops are good for which situations

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Loops

- Increment and Decrement: `x++ y--`
- Using a while loop for input validation
- Counters/count controlled loop
- Keeping a running total
- Sentinel controlled loop
- Nested loops
- Infinite loops

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Reading from a File

- Using file stream objects for file I/O:
 - ▶ using ifstream, ofstream variables (fin, fout)
 - ▶ open and close, `<<` and `>>` with fin and fout
- Reading data from a file of unknown length
 - ▶ while (fin `>>` number)

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Sample problem: what is output?

- What is the output of the following statements?

```
int fox = 6;
float dog = 5.7;
dog = fox + dog;
if (fox > dog)
    cout << "Hello!";
else if (fox < dog)
    cout << dog;
else
    cout << fox;
cout << endl;
cout << fixed << setprecision(1);
cout << "dog is: " << dog << endl;
```

- A) B) C) D)

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Sample problem: Programming

The formula for the volume of a sphere is

$$A = \frac{4}{3}\pi r^3$$

where π is 3.14159 and r is the radius of the sphere. Write a C++ program that displays a table of volumes of circles with radius values 1 through 10. The volumes should be displayed with fractional amounts.

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How to study

- Review the lecture slides (Unit 3 & Unit 4)
 - understand all the concepts, **quiz yourself**
- Use Revel to help understand the slides
- Review programming assignments
 - assignments 3 + 4 solutions will be up front
- Review/redo the Squarecap and Revel questions
- Do some of the programming challenges!
- Practice, practice, practice! Write code! Sleep!