

# Test 2 Review

CS 1428  
Fall 2019

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# Test 2

- Friday October 18
- In class, closed book, closed notes, clean desk
- 10% of your final grade
- 50 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
  - ▶ 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: 5.2-12

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## Content from Slides

Units 3 and 4:

- 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

- Using a while loop for input validation
- Counters/count controlled loop
- Keeping a running total
- Sentinel controlled loop
- Nested loops
- Reading data from a file of unknown length
  - while (fin >> number)
- Infinite loops

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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) 

Hello!
dog is: 5.7

 B) 

Hello!
dog is: 11.7

 C) 

11.7
dog is: 11.7

 D) 

6
dog is: 5.7

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## Sample problem: Programming

The formula for the volume of a sphere is

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

where  $\pi$  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
  - assignment 4 solution will be up front
- Review/redo the Squarecap and Revel questions
- Do some of the programming challenges!
- Practice, practice, practice! Write code! Sleep!

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