

Exam 1 Review

CS 1428
Fall 2011

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Exam 1

- Friday, September 30
- In class, closed book, closed notes, clean desk
- 10% of your final grade
- 55 minutes to complete it
- I recommend using a pencil (and eraser)
- All writing will be done on the test paper I will hand out.

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Exam Format

- 100 points total
 - 30 points: writing programs
 - Some multiple choice
 - Some fill-in-the-blank
 - Some tracing code/finding errors in code
 - Some evaluating C++ expressions
 - Some binary to/from decimal conversion

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Example Programming Problem

Write a program that reads a floating point number representing the side of a square from a file named "test.txt" and prints out the area of the square formatted to five decimal places.

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Example Tracing Problem

What will the EXACT output of the following program be?

```
int foo = 9;
char str[6] = "Hey!";
float foo2 = 5.7;

foo2 = foo - foo2;

if (foo > foo2)
    cout << "Hello!";
else if (foo < foo2)
    cout << foo2;
else
    cout << foo;

cout << endl << str;
cout << "foo2 is: " << fixed
    << setprecision(1) << foo << endl;
```

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Intro to Computer and Programming

- Intro to computer and programming
 - ★ hardware vs software
 - ★ organization of hardware (cpu:(ALU,control unit), i/o devices, main memory, secondary storage)
- Algorithm
- Programming language: machine lang vs low level lang vs high level lang
- Translation: source code file -> ... -> executable
- Programming process :
 - ★ (compiler (syntax) errors vs. runtime errors)

Introduction to C++

- Literals: numbers, characters, strings
- Rules for C++ identifiers
- Variable Definitions
 - Initialization
- Assignment Statements
- Data Types
 - ★ int, short, long, float, double, bool, char
 - ★ values/ranges (rough idea)
 - ★ suitability of each for various types of data

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Expressions and Types

- Numerical Expressions
 - ★ Operators: +, -, *, /, %
 - ★ Precedence rules, parens
- Type Conversions:
 - ★ binary operations
 - ★ assignment
 - ★ type casting
- Integer division vs float division
- Named constants

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Input/Output

- cout and <<
- cin and >>
- formatting: setw, setprecision, fixed
- inputting character data into a char array
 - * char name[10];
 - * >> vs cin.getline(var)
 - * the null character
- using filestream objects for file I/O:
 - * ifstream, ofstream
 - * open and close

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Binary Representation

- binary number system, decimal number system
 - * convert to/from
- binary arithmetic
- negative numbers:
 - * sign and magnitude
 - * 2's complement
 - * pros/cons of each
 - * very simple conversions

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Relational Exprs, Decisions

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