The final exam has 50 questions, similar to the questions on the quizzes: multiple choice, fill in the blank, matching, and multiple answer (check all that apply) You will be allowed to use scrap paper provided by the assessment center, but no notes, books, websites, or compilers. You have 2 hours.

The exam is under assignments (or quizzes), but is password protected. The assessment center will put in the password. The exam will be available on December 8. Please take the exam as early as possible. There is a long wait at the assessment centers at the end of finals week.

The topics cover everything we have learned this semester: including formatting numbers in output, Boolean expressions, arrays, loops, switch, files, classes and some of the terms. In some case you will be asked to trace some code and select the output that will be produced.

Topics include the following:

Understand how numbers are formatted:

```
double value=0.5;
int item=85;
System.out.printf("The %d is %5.2f",item,value);
```

Be able to select the best type for a variable, or select the correct variable declaration.

Be able to declare and process an array.

What errors could occur when you open a file? How do you handle the errors?

Understand how the "?" operator works: a=(b<a)? b: 0;

Understand how switch works and what break does.

Be able to trace through a program and show the output. The program may involve arrays, loops, formatting, and other constructs that you have learned this semester.

Be able to evaluate Boolean expressions include ones that have ?, &&, and ||.

Know the terminology of object oriented programming: class, this, constructors, subclass, inheritance, instance, methods, private vs. public, member fields, set and get functions.

Be able to trace loops that increment and decrement characters: char ch='A'; ch++ makes ch 'B'.

Be able to differentiate between different types of loops and trace programs with loops.

Know what is required to set up a program with statements such as import java.util.*; Scanner keyboard=new Scanner(System.in); keyboard.nextInt(); and annotations.