

COP 3330 – Object Oriented Programming in Java
Quiz 1 Review

Date: 1/30/2026

Time: 12:30 pm (come early)

Location: CB2-106 our classroom

Outline of course material thus far:

1. Basic Program Setup
 - a. Required class name, file name
 - b. Required main method signature
 - c. Optional imports
2. Printing
 - a. System.out.println
 - b. System.out.print
 - c. Use of + with strings for string concatenation
 - d. Escape sequences
3. Variables
 - a. Primitive Types – (byte, short, int, long), (float, double), boolean, char
integer types real nums
 - b. Assignment Statement
4. Arithmetic Expressions
 - a. Usual PEMDAS
 - b. Pay attention to integer division
 - c. Pay attention to mod
 - d. Know how to force the computer to do either integer division or floating pt division.
 - e. Pay attention order of statements when solving problems.
5. If statement
 - a. Four types of syntax (if, if-else, if-else if-else if..., if-else if-else if-else)
 - b. Use of block of statements {}
 - c. Java has a boolean type and its implications
 - d. &&, || and !
 - e. Pay attention to difference between one if-else if... and separate ifs
 - f. Look at general problem solving molds with decision making
6. Loops
 - a. While loop
 - b. For loop
 - c. Do-while loop
 - d. Use of block of statements {}
 - e. Nesting of loops to solve problems
 - f. break and uses
 - g. continue and uses

7. Math class

- a. static methods only
- b. How to call static methods
- c. Don't call methods that return something on a line by themselves
- d. abs, cbrt, ceil, cos, exp, floor, log, log10, max, min, pow, sin, sqrt, tan, toDegrees, toRadians

8. Random class

- a. constructors – default, seed, corresponding behavior.
- b. How to call instance methods
- c. nextBoolean(), nextDouble(), nextGaussian(), nextInt(int bound)

9. String class

- a. Strings are immutable
- b. difference between reference and object
- c. How to make a reference point elsewhere
- d. Use of String methods
- e. charAt, compareTo, compareToIgnoreCase, concat, contains, endsWith, equals, equalsIgnoreCase, indexOf – 2 versions, replace, substring – 2 versions, toLowerCase, toUpperCase
- f. Many methods create new String object based on object method was called on.

Quiz Format

Short Answer

Coding Questions – write code segments, fill in solutions to full programs, won't have to write boring template code (public static void main...)

Other

50 points

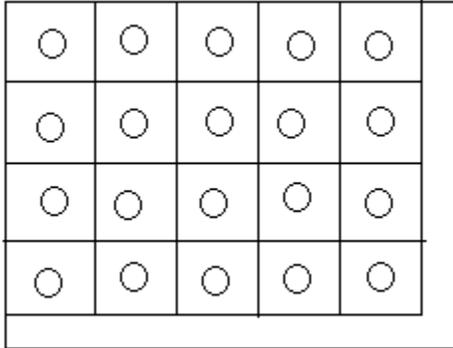
Quiz Aids

None

Math class, Random class and String class documentation that is necessary plus a couple random extra methods will be provided

Practice Quiz Questions

1) You want to have a program that calculates the number of pepperonis to place on rectangular pizzas. For each pizza, you want the user to be able to choose the “density” of pepperonis according to the following design:



Essentially, each pepperoni is roughly centered in a square of the pizza of some given size (perhaps 35 mm by 35 mm). We portion the rectangular pizza into as many rows and columns as we can, of this fixed size. Each of these square cells of the pizza get one piece of pepperoni. Depending on the dimensions of the pizza, some room may be leftover on the right side and bottom of the pizza that are too small to form the squares desired. These areas do not get any pepperonis. Write a program that takes in the length and width of the pizza in millimeters, as well as the size of the bounding square for one pepperoni, in millimeters, and calculates the total number of pepperonis needed for the pizza.

2) Write a program that determines whether or not Anna and Bob were at the restaurant at the same time. Ask the user when Anna and Bob arrived at and left the restaurant, respectively. (The user should answer in number of minutes after midnight, and assume that both arrived and left on the same day.) Determine whether or not Anna and Bob were at the restaurant at the same time, and if so, for how many minutes they overlapped. For example, if Anna arrived at 720 minutes after midnight and left 800 minutes after midnight and Bob arrived at 600 minutes after midnight and left 740 minutes after midnight, they were at the restaurant together for 20 minutes.

3) Write a program that takes in the user's first and last names and creates a single string object that stores their name in the format last comma first. For example, if they enter "Anne" and "Bridges", create a string object that stores "Bridges, Anne". For practice, explicitly call the concat method. Also create a string that has the first two letters of the first name and first letter of the last name, all uppercase as the person's monogram.

4) Write a program to play a game of marbles. The game starts with 32 marbles and two players. Each player must take 1, 2 or 3 marbles on their turn. Turns go back and forth between the two players. The winner is the person who takes the last marble. Your program should prompt each player with a message that states the current number of marbles and asks them how many they'd like to take. Continue until there is a winner. Then your program should print out the winner (either player #1 or player #2.) (Incidentally, if both players play optimally, who always wins? What is their strategy?)