

# CSCI 145 -- PA 3

## Using Classes and Objects

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Feel free to discuss and help each other out but does not imply that you can give away your code or your answers! You cannot work with a lab partner for this assignment. **You must always use the required template (JavaClassTemplate.java from Canvas) and output "Author: Your Name(s)" or "Modified by: Your Name(s)" for each program as applicable.**

Perform as many exercises from chapter 3 of lab book as possible, but the following lab exercises must be completed. You are not required to turn in written answers to various questions, but it is very helpful in understanding important concepts. You might see those questions on quizzes and exams. It is very important to be able read existing programs and follow the execution flow of those programs.

### Exercise 1 -- Working with Strings

**Exercise 2** – Computing Distance; add the following features:

- Generate a random coordinate (x3, y3) – each value is an integer between 1 and 100.
- Compute the distance between (0, 0) and (x3, y3).
- Display the distance with 2 digits after the decimal point.

### Exercise 3 -- Formatting Output

**Exercise 4** -- Experimenting with the Integer Class – try 47 for step 1, try 47 and -10 for step 3

**Question 1:** You need to randomly generate an uppercase letter (between ‘A’ and ‘Z’), a lowercase letter (between ‘a’ and ‘z’), and then display those two characters (e.g., Cx, Da, or Zz). Outline the steps to accomplish this task for an application.

**Question 2:** Why would it be incorrect to generate a single random number between 2 and 12 for a roll of two dice?

**Extra Credit Option A:** Perform **Playing with Cards** exercise from the lab manual.

or

**Extra Credit Option B:** Implement a JavaFX application to display the your first and last initials in large block format horizontally (like the text-based initial application in PA 1; you can display the characters in larger font or draw those characters by drawing various lines/shapes). *You need to have JDK 8 installed or a new JDK with JavaFX installed for your development environment to do this exercise, or you can use the computer in the classroom.*

**Fill out and turn in the PA submission file for this assignment (save as PDF format).**

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