

BRONX COMMUNITY COLLEGE
of the City University of New York
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

CSI W99 Java Workshop
Summer 2017

Exercises for Day 1
July 5, 2017

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Instructions

For any programming problem, use the same programming style as used in today's lesson. Create a project in your Eclipse Workspace, and create a class with a `main` method that performs the task. Both the project and the class (and the file defining the class) should have the same name, named for the task it performs.

1. Write a Java program, called `AddDouble`, that adds two numbers which are given as type `double` rather than `int`. (Hint: you can start with the program `Add.java` from today, making these changes:
 - i. Declare variables `a` and `b` as having type `double` rather than `int`.
 - ii. Get their values using `input.nextDouble` rather than `input.nextInt`.
 - iii. Format the sum `a + b` using `%.2f`—giving two decimal places—rather than `%d`.
2. Write a Java program that calculates the volume of a cylinder in cubic centimeters, using the formula $V = \pi r^2 h$, where r is the radius of the circular base of the cylinder and h is the cylinder's height, both given in centimeters. The program will ask the user for the radius and height, and output the volume. The value of π is given by the constant `Math.PI`. (The Java language provides this constant as part of the package `java.lang`, which is automatically imported by default.) To perform the calculation, declare the input variables `r` and `h` to have type `double`. To calculate r^2 just use `r*r`. Output the volume to two decimal places. See exercise 1 on how to format `double` values with decimal places.
3. True or False?
 - i. It is not necessary for an "executable" Java application to start with `public static void main(String[] args)`.
 - ii. `System.out.print` displays its argument in the command window followed by a newline character.
 - iii. In Java, a class name should be the same as the file name, where the class declaration is stored.
 - iv. Memory leaks can happen in Java applications, similar to C++ programs.

4. Identify and correct the errors in the following block of code:

```
import java.util.Scanner;

public class minMax
{
    public static void main(String[] args)
    {
        System.out.println("This program finds the largest and smallest");
        System.out.println("of three input integers.");

        Scanner in = Scanner(System.in);

        int a, max, min;

        System.out.print("Input the first integer: ");

        a = in.nextInt();
        max = a;
        min = a;

        System.out.print("Input the second integer: ");

        a = in.nextInt();
        if (max <= a) max = a;
        if (min > a) min == a;

        System.print("Input the third integer: ");

        a = in.nextInt();
        if (max < a) max = a;
        if (min > a) min = a;

        System.out.printf("The largest is %d, the smallest is %s",max ,min);
    }
}
```

5. (Separating the Digits in an Integer)

Write an application that inputs one number consisting of five digits from the user (the input type should be int), separates the number into its individual digits and prints the digits separated from one another by three spaces each. For example, if the user types in the number 76859, the program should print 7 6 8 5 9. (Assume that the user inputs the correct number of digits, 5.)

What happens when you enter a number with more than five digits?

What happens when you enter a number with fewer than five digits?

(Hint: It's possible to do this exercise with the use of division and remainder operations.)