

Java Methods for Programmers - Practice Problems

All problems in this set should be completed in a project called Java12_Methods. Each problem should get its own class and must be named starting with a letter. For example, we could name the second problem in level 1: level 1_2.

Level 1

1. (Basic)Write a program that has a method called printHello. The printHello method is public static void and takes no parameters. The main method should call the printHello method three times. The printHello method should print the word "hello."
2. (Basic)Write a program that has a method called printName. The printName method is public static void and takes no parameters. The main method should call the printName method once. The printName method should use a loop to output your name four times.
3. (Parameters) Write a program that has a method called output. The output method is public static void and takes a single String parameter. The main method should call the output method three times. Each time, a different word should be sent in to be output. The output method should take the parameter string and use System.out.println to display it.
4. (Parameters) Write a program that has a method called printName. The printName method is public static void and takes a String parameter and an int parameter. The main method should call the printName method once. The printName method should use a loop to output the name parameter the number of times of the int parameter.
5. (Parameters)Write a program that takes 4 integers (x1, y1, x2, y2). Send the information into a method called Format that outputs the points as (x1, y1) & (x2, y2).
6. (Returns)Write a method called getID that takes no parameters, but returns your id to the main method where it is stored and printed.
7. (Returns)Write a method called getName that takes no parameters, but returns your name to the main method where it is stored and printed 4 times.
8. (Returns)Write a method called formatID that takes an int parameter. The main method should ask the user for their id. That id should be sent into the formatID method. The formatID method will add "ID:" in front of the number and return it to the main (as a String) to be output.

Level 2

1. (Basic)Write a program that prints your name and id#. The main method should call a method called printHeader. The printHeader method should call two methods, printName(displays your name) and printID (displays your id). All methods are public static void and take no parameters.
2. (Parameters)Write a program that prints your name and id#. The main method should call a method called printHeader. The printHeader method should call two methods, printName(displays your name) and printID (displays your id). All methods are public static void. The printHeader should take the students name and id as parameters and pass them on to the appropriate methods to be output.
3. (Parameters)Write a program that assigns values to two integer variables. Call methods add, multiply, subtract, divide and modulus, each taking two integers as parameters. Each method should perform the appropriate operation and display the result.
4. (Parameters)Write two functions, both called add. The first add method should take two int parameters and display the result. The second add method should take four int parameters and display the result. Call both from the main.
5. (Parameters)Write a program that creates a 1D array of integers. The array should be of size 10 and should store random numbers between 1 and 50. In the main, create and output the array. Then, call a method named addFive that adds five to each value in the array. DO NOT output the array values in the method. However, in the main, after addFive is called, the main should output the values of the array again. What happened? Explain in a comment in the program.
6. (Returns)Write a program that takes a users birth month, year and day. Send that information into a method called

formatBday that returns the information as a String in the form 9/17/1992. The output should be written in the main.

7. (Returns) Write a program that asks the user for two integers. The numbers should be sent into methods that add, subtract, multiply and divide the numbers. Each method should complete the calculation and return the answer to the main for output.

Level 3

1. Craps

- a. Write a program that would simulate the game of craps. The main method should call properly named methods that would simulate the basics of a craps game. Each of the methods called, all public static void with no parameters, should simply output a description of what would happen. This type of method is called a stub, and serves as a placeholder until the full code can be implemented.
- b. Alter your craps shell program so that any rolling occurs in the main, with the values passed to the necessary methods. This time, the stub methods can be built out to handle the rolls and provide the appropriate outputs.
- c. Complete your craps game so that it works by passing information back and forth from methods. In craps, a 7/11 wins on the first roll, but loses on any subsequent roll. A 2 or 12 loses on the first roll but is meaningless on subsequent rolls. If any other number is rolled first, it is the point and the player will win when and if they roll the point again, before rolling a 7 or 11. The main method should look something like this:

```
public static void main(String [] args)
{
    //set up input and take initial bet
    int initialRoll=roll();
    int winner=initWin(initialRoll); //1=win, 2=lose, 3=point
    while(winner==3)
    {
        int roll=roll();
        winner=pointWin(initialRoll, roll);
    }
    if(winner==1)
        winner(bet);
    else
        loser(bet);
}
```

2. Write a program that asks a user for a password. The password they enter has several rules as follows:
 - a. The password must be at least 6 characters in length
 - b. The password must have the number 1 in it
 - c. The password must start with a capital P

Write a method for each of the rules that returns true if the password meets that criteria and false otherwise. Use the results in the main to decide and output if the password is valid or not.

3. Create a class with no main that has a variety of math calculations in it. Have methods that calculate the slope, distance and midpoint of any two points. Each method should return the result in an appropriate format. Then, from a separate program with a main, take input from a user, call the methods and output the results.
4. Drawing problem to come...

Level 4 - Competition Level

1. MMM - Write a program that takes an undefined set of numbers (comma separated) from a user (use the split method of the String class - look it up). Then, send the resulting array into three different methods, mean, median and mode. You may assume that the values in the list will be entered in order. Each method should calculate the appropriate value and return it to the main for output.