Java Programming
MTech Preparatory Semester 2016
Practice programs - 1

Problem 1:

Write a Java program that prints out “Hello World” as many times as the user wants. The user types in an integer to specify the number of times this message should be printed.

Problem 2:

Write a Java program that prints out the following patterns of numbers:

```
0
010
01210
0123210
012343210
01234543210
0123456543210
012345676543210
01234567876543210
0123456789876543210
```

Can you do the above with only 1 loop?

Change this to print the following:

```
                0
               010
              01210
             0123210
            012343210
           01234543210
          0123456543210
         012345676543210
        01234567876543210
       0123456789876543210
```

Problem 3:

A taxi fleet consists of diesel and electric cars. For this exercise, we have data about the fuel efficiency and current fuel level of all cars in the fleet. We would like to calculate the range of the car (distance it can cover with the current fuel level). Assume there is a max of 100 cars in the fleet.

For diesel cars, the fuel efficiency of each car is specified in km/l and the amount of fuel remaining in the tank is specified in litres. For electric cars, efficiency is specified in W-h/km and the remaining battery charge is specified as a percentage of the total battery energy currently remaining. Assume all electric cars have a battery capacity of 100 kW-h, and assume the fuel efficiency is a constant for a given vehicle.

The input data is a file (or input through the keyboard) with the following information:
Line 1: integer n – the number of cars in the fleet
Lines 2 to n+1 each contain an integer and two float values.
The first integer is 1 or 2 indicating if the car is diesel or electric respectively
The next value, a float, is the fuel efficiency of the current car
The third value, a float is the amount of fuel left in the car (diesel) or percentage charge (electric car), as described above.

Write a Java program that reads this data, stores relevant information about each car, and then prints out the range for each car. You should first read all the data before printing any output. Essentially, the program should have two loops: one to read information about each car and store the data in an appropriate structure and format, and the second loop should iterate over the set of cars and print out the range of each car. The order of cars in the output should be the same as in the input file.

The output should be a series of lines, each line looking like:

Car i: range = _____

Sample data:
5
1 15.0 11.5
2 172.1 35.5
2 150.5 73
1 14.0 14.0
2 160.5 11