COMP 203 Data Structures and Algorithms, Fall 2023
Instructor: Cavidan Yakupoğlu Karaağaç
Lab 1
Credits: Zafer Aydın

Submit your Java codes to Canvas. The lab is open book.

1. Write a short Java class named AllBaseTypes, which has a main method that reads input from the standard input device for the following types: boolean, String, byte, short, int, long, float, double and prints the value back to standard output device. Make sure you promt the user to enter an input from each base type. You can use the following methods of the Scanner class for reading input. It is sufficient to use nextLine() method to read String.

Method	Description
nextInt()	reads an int value from the user
nextFloat()	reads a float value form the user
nextBoolean()	reads a boolean value from the user
nextLine()	reads a line of text from the user
next()	reads a word from the user
nextByte()	reads a byte value from the user
nextDouble()	reads a double value from the user
nextShort()	reads a short value from the user
nextLong()	reads a long value from the user

Make sure you use methods named hasNextInt(), hasNextDouble(), hasNextBoolean(), hasNextLine(), hasNextByte(), hasNextShort(), hasNextLong(), hasNextFloat() to check the value in the input stream can be interpreted as the corresponding base type (e.g. the value entered can be read as an int). If any of these methods return false print a message saying that the value entered is not acceptable and promt the user again to enter the corresponding base type. You can use a while loop fort his purpose. Here is a sample template code

```
while (!input.hasNextInt()) {
      input.nextLine( );
      System.out.print("Invalid integer; please enter an integer: ");
}
int i = input.nextInt();
```

Note that this code template is not complete. You should add other commands to this code to implement the tasks requested for this question.

2. Write a Java class named Flower that has three instance variables of type String, int, and float, which respectively represent the name of the flower, its number of petals, and price. Your class must include two constructor methods: one with no arguments, which should be an empty constructor and one with three arguments that initialize each variable to an appropriate value. Your class should include methods for setting the value of each type, and getting the value of each type. Implement another class named FlowerDemo, which includes a main method that

- generates two Flower objects that are referenced by variables called flower1 and flower2. flower1 will be generated using the constructor with zero arguments and flower2 using the constructor with three arguments.
- reads the value of each instance variable of the Flower class for the objects you instantiated using the get methods and stores these to other variables in main method. Prints the value of these variables on the screen.
- calls the set methods to change the values of the instance variables for flower1. Then read these values using the get methods and print them on the screen.

COMP 203 Data Structures and Algorithms, Fall 2023
Instructor: Cavidan Yakupoğlu Karaağaç
Lab 1
Credits: Zafer Aydın

3. Write a short Java class named NoPunctuation, which has a main method that uses a StringBuilder instance to remove all the punctuation from a string s storing a sentence, for example, transforming the string "Let's try, Mike!" to "Lets try Mike". Below are some code templates you may find useful, which

demonstrate the syntax of the commands you may consider using. You don't have to use all of these commands but the ones that are relavant or you may need to modify some of them. Furthermore this code template is not complete. You should add other commands to this code to implement the tasks requested for this question.

```
StringBuilder sb = new StringBuilder();
sb.append("a");
String str = sb.toString();
String punctuation = ",.;:?!-(){}[]`\"\'";

if (!punctuation.contains(str.substring(i,i+1)))
      sb.append(…)
```