Montgomery College, CMSC 203
Worksheet 1
Module 4

Objectives

- DialogBox
- System.out.printf() method
- Random numbers
- Using API

Warm-up Question – (for loop)

1. How many times will the following loop run?

```
int counter = 10;
for(int i = 0; i < counter; i = i+2)
     System.out.println("Hello World");
```

Answer: 5

Concept Questions

1. Display a "Hello World" message using a DialogBox,

Answer:

```
JOptionPane.showMessageDialog(null, "Hello World");
```

2. Prompt a user to enter a `String` using Swing

Answer:

```
String name;
name = JOptionPane.showInputDialog("Enter your name.");
```

3. Which one of these lines of code converts a `String` into a `Double`?

a) `double dVar = Double.parseDouble("10.6");`
b) `double dVar = (Double)"10.6";`
c) `double dVar = String.toDouble("10.6");`
d) `All of the above`
e) `Both a and b`

`Answer :a`

4. Prompt the user to enter their age using a DialogBox, then convert the entered `String` into an `Integer`.

Answer:

```
int age;
String str;
str = JOptionPane.showInputDialog("Enter a number.");
age = Integer.parseInt(str);
```

5. Which of these printf statements will output a number with a 2 decimal places precision.

a) `System.out.printf("Total: %5.2f", total);`
b) `System.out.printf("Total: %.2f", total);`
c) `System.out.printf.setPrecision(2, total);`
d) `Both a and b`

`Answer: d`

6. Using `printf`, write code that will display your name and age.

Answer:

```
String name = "Bob";
String age = 34;
System.out.printf("My name is %s and I am %d years old", name, age);
```

7. Which library needs to be imported in order to be able to generate random number?

a) import java.lang.Random;
b) import java.util.Random;
c) import Random;
d) All of the above

Answer: b

8. Which line of code will successfully generate a random `Integer?`

a) `int r = rand.next();`
b) `int r = rand.nextRandomNumber();`
c) `int r = rand.nextInt();`
d) All of the above

Answer: c

9. Write java statements that will randomly generate an integer between 1 and 7 (Inclusive).

Answer:

```
Random r = new Random();
int num = r.nextInt(7) + 1;
```

10. Write java statements that will randomly generate an integer between 4 and 15 (Inclusive).

Answer:

```
Random r = new Random();
// use this formula r.nextInt((max - min) + 1) + min
int num = r.nextInt((15-4) + 1 ) + 4;
```

Programming Questions

1. Write a program that does the following:
- Prompt the user to enter their name and age into the program using DialogBox.
- Generate a random number from 1 – 10 that represents number of cats.
- Show the following message using DialogBox:

"My name is _____. "
"I am ___ years old."
"I will have __ cats in the future."
Replace the blanks with your own information.

Answer:

```
import javax.swing.*;
import java.util.Random;

public class Main {

    public static void main(String [] args){
        String name = JOptionPane.showInputDialog("Enter your name: ");
        int age = Integer.parseInt(JOptionPane.showInputDialog("Enter your
age: "));

        Random r = new Random();
        int cats = r.nextInt(10) + 1;

        JOptionPane.showMessageDialog(null, "My name is " + name + "\n"
                                        + "I am " + age + " years old. \n"
                                        + "I will have " + cats + " cats in
the future. ");
    }
}
```

2. Write a program that does the following:
- Prompt the user to input a positive integer in a loop until a negative number or zero is entered.
- On every iteration, if the number is positive, generate a random integer between 1 and the inputted value. If the number is negative or zero, exit the program
- On every iteration, output the generated value using printf that is left justified by 5 spaces and make sure every iteration starts on a new line.

Ex:

```
Enter a positive integer:
9
The random number is:     5
Enter a positive integer:
10
The random number is:     7
Enter a positive integer:
100
The random number is:    29
Enter a positive integer:
-9
```

GoodBye!

Answer:

```
import java.util.Random;
import java.util.Scanner;

public class Main {

    public static void main(String [] args){
        Scanner sc = new Scanner(System.in);
        Random r = new Random();

        int num = 0;

        do{
            System.out.println("Enter a positive integer: ");
            num = sc.nextInt();
            if(num > 0) {
                int rand = r.nextInt(num) + 1;
                System.out.printf("The random number is: %5d \n", rand);
            }
        }while(num > 0);
    }
}
```