

LAB #1: LOOPS

PART 1: Exercises

1. How many times will the loop execute in the following exercises? For each – what is the output?

```
//1
int x1 = 100;
while(x1 > 0) {
    System.out.print(x1 / 10 + " ");
    x1 /= 2;
}
System.out.println();
```

```
//2
int x2 = 2;
do {
    System.out.print(x2 + " ");
    x2 *= x2;
} while(x2 < 200);
System.out.println();
```

```
//3
int x3 = 250;
while(x3 % 3 != 0) {
    System.out.print(x3 + " ");
}
System.out.println();
```

```
//4
int x4 = 10;
while(x4 < 10) {
    System.out.print(x4 + " ");
    x4 --;
}
System.out.println();
```

```
//5
int x5 = 1;
while(x5 < 100) {
    System.out.print(x5 + " ");
    x5 += 10;
}
System.out.println();
```

```
//6
for(int i = 0; i <= 2; i++) {
    for(int j = 1; j <= 4; j++) {
        for (int k = 1; k <= 5; k++) {
            System.out.print("*");
        }
        System.out.print("#");
    }
    System.out.println();
}
```

PART 2: Programming

1. Task: Suppose you are writing a game-playing program that involves 2-digit numbers. First, generate a random 2-digit number. The user will try to guess this number in at most 10 attempts. While getting input from the user give a hint if a match was found (0/1/2 digits match). Test for errors in input (including type check). Use the sample output to fully understand the program requirements.

SAMPLE OUTPUT:

```
Try to guess my secret two-digit number, and I'll tell you how
many digits from your guess appear in my number.
Be smart! You can try at most 10 times.
Your guess: 33
Incorrect (hint: 0 digits match)
Your guess: gbhj
Not an integer! Try again: Your guess: 11
Incorrect (hint: 0 digits match)
Your guess: 9.6
Not an integer! Try again: Your guess: 34
Incorrect (hint: 0 digits match)
Your guess: 26
Incorrect (hint: 1 digits match)
Your guess: 28
Incorrect (hint: 1 digits match)
Your guess: 12
Incorrect (hint: 1 digits match)
Your guess: f
Not an integer! Try again: Your guess: 27
Incorrect (hint: 1 digits match)
Your guess: 29
Incorrect (hint: 2 digits match)
Your guess: 92
You guessed my number in 9 tries
```

2. Task: Use nested **for** loops statements to draw empty boxes of any character (user input). The boxes have the same number of rows and columns (user input - valid range: 5 to 21). Test for errors in input (including type). Use the sample output to fully understand the program requirements.

SAMPLE OUTPUT:

```
Do you want to start(Y/N): y
How many chars/last row? n
Not an integer! Try again! How many chars/last row? fgfgfg
Not an integer! Try again! How many chars/last row? 7.6
Not an integer! Try again! How many chars/last row? 34
ERROR! Valid range 5 - 21. How many chars/last row? 7
What character? k
```

```
kkkkkkkk
k      k
k      k
k      k
k      k
k      k
kkkkkkkk
Do you want to continue(Y/N): y
How many chars/last row? y
Not an integer! Try again! How many chars/last row? 8
What character? #
#####
#      #
#      #
#      #
#      #
#      #
#      #
#####
Do you want to continue(Y/N): n
```

Notes:

- A.** The lab will NOT be graded, but you have to submit good quality work in order to get credit.
- B.** The lab should be completed by the start of the next scheduled lab class. E-mail the **.java** files (attachments) to Mohamed Said at mheshal@students.towson.edu
- Very important:** Make sure that you have COSC 237.section, your name, and Lab#1 in the *Subject* box of your e-mail.
- C.** In case you have any problems, contact the TA or the instructor for assistance.