LAB #1: LOOPS

PART 1: Exercises

1. How many times will the loop execute in the following exercises? For each exercise – 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
```

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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
```

```
kkkkkkk
k     k
k     k
k     k
k     k
k     k
kkkkkkk
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 Rohankumar Patel (rpatel27@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.