Lab 4b

CSC-121, Fall 2025

Group Exercises

Q1. Reading and Writing Code

1. Loop Conversion: while -> for

Convert the while loop in the following code to a for loop:

```java
int count = 0;

while (count < 50)

{

	System.out.println("count is " + count);

	count++;

}
```

2. Celsius to Fahrenheit Table

Write a loop that displays a table of the Celsius temperatures 0 through 20 and their Fahrenheit equivalents. The formula for converting a temperature from Celsius to Fahrenheit is:

$$F = \frac{9}{5}C + 32$$

…where F is the Fahrenheit temperature and C is the Celsius temperature.

3. Nested Loops

Write nested loops to draw this pattern:

```
*******
******
*****
****
***
**
*
```

HINT: You might want to use `System.out.print("*");` somewhere in your code.

Partner Exercises

Work together with a partner to build the following programs.

Q1. Coin Flip

Complete the following program so it performs the following actions 10 times:

- Generates a random number that is either 0 or 1.
- Displays either the word “Heads” or the word “Tails” depending on the random number that was generated. (You pick which number means Heads and which means Tails.)
- After 10 flips, print out the total number of heads and the total number of tails.

Q2. Largest and Smallest

Write a program with a loop that lets the user enter a series of integers. The user should enter the terminal value −99 to signal the end of the series. After all the numbers have been entered, the program should display the largest and smallest numbers entered.

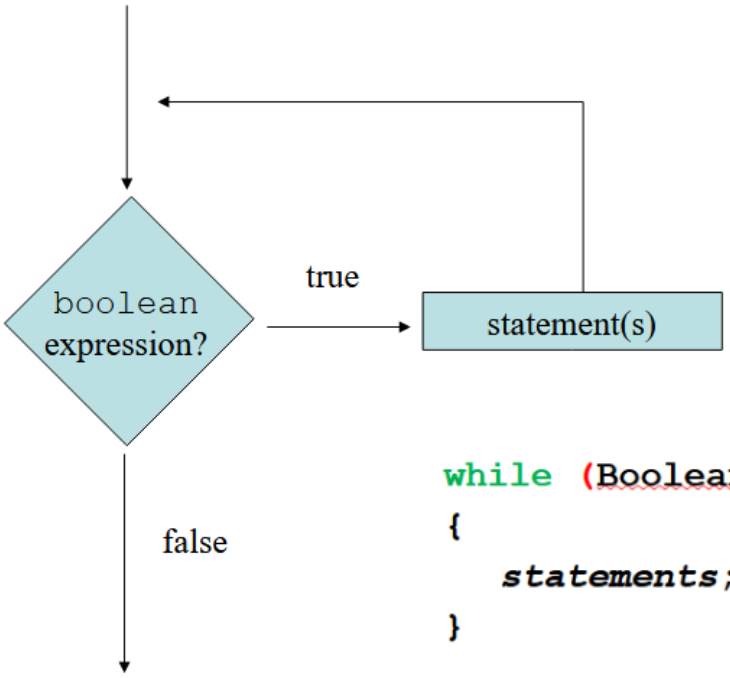
Q3. Nested Loops

Write nested loops to draw this pattern:

```
##

# #

#  #

#   #

#    #

#     #
```

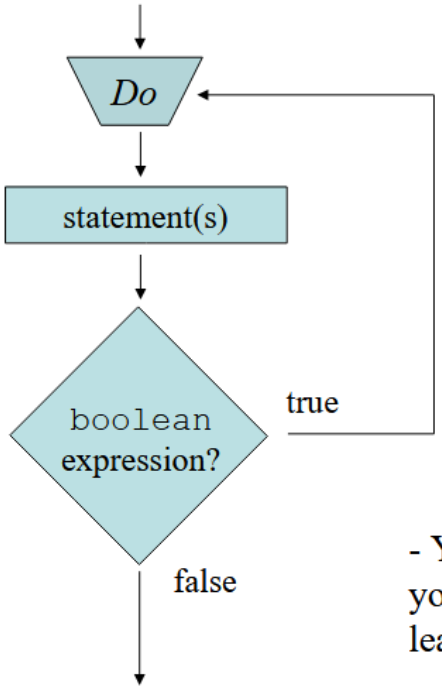
HINT: You might want to use `System.out.print(" ");` somewhere in your code.

The `while` loop Flowchart




```
while (BooleanExpression)
{
   statements;
}
```

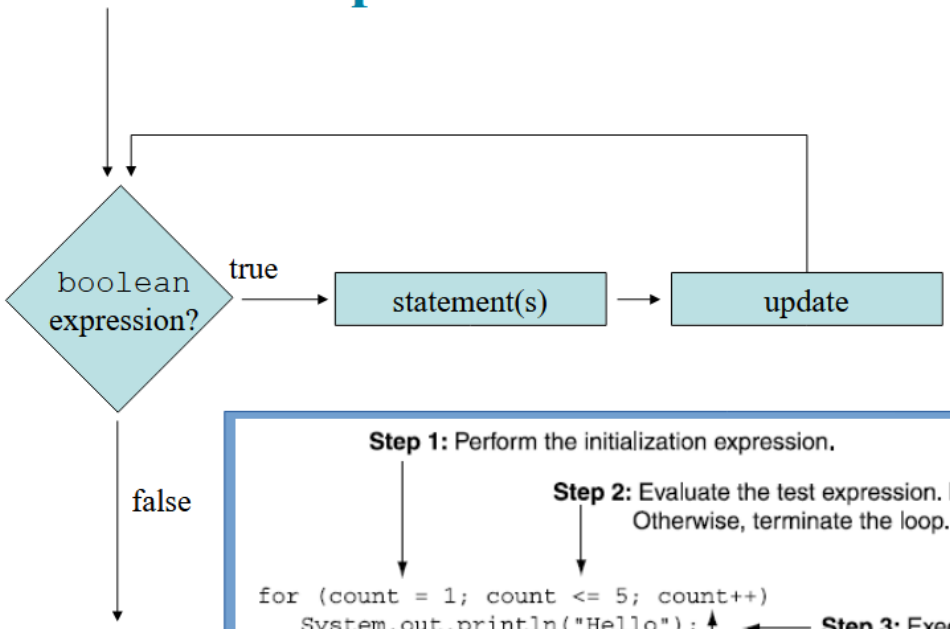
The `do-while` Loop Flowchart




```
int x = 1;
do
{
    System.out.println(x);
} while (x < 0);
```

- You should use the do-while loop when you want to make sure the loop executes at least once.

The `for` Loop Flowchart



Step 1: Perform the initialization expression.

Step 2: Evaluate the test expression. If it is `true`, go to Step 3
Otherwise, terminate the loop.

```
for (count = 1; count <= 5; count++)
   System.out.println("Hello");
```

Step 3: Execute the body of the loop.

Step 4: Perform the update expression,
then go back to Step 2.

Individual Tasks

1. Project Check-In

Have you started your Project **#2**, yet? ***Don't wait until the last minute!*** You should present your plan to one of the Tech Fellows and get feedback. Remember, part of your grade is based on doing the check-in.

2. CodePath Signup

(*NOTE: If you completed the CodePath signup in the previous lab, skip this block.*) As stated on the first day of class, this course is presented in cooperation with CodePath.org. You may have already gotten an email from CodePath to take their pre-assessment test. Below is a link to sign up for the CodePath in Residence perks, such as career counseling, resume and portfolio reviews, and other services. These are *free* services provided to any CodePath course student or alumni. Signing up is not required, but strongly encouraged. You will also need a free GitHub account in order to sign up. You can use the remaining time in lab to sign up, or talk to a TA about your project or the homework.

https://go.codepath.org/CiRFA25

3. CodePath Pre-Assessment

Check your email! CodePath has sent out a pre-assessment Computer Science test to all enrolled students. Don't worry, you are not graded on this! CodePath uses these assessments to track student progress and improvement throughout the course. Just answer the questions as best as you can, and it is okay if you don't know everything. You'll need to set aside about 30 minutes for the assessment, either here in lab time or at home.