LEC 10

CSE 121

While Loops

Questions during Class?

Raise hand or send here

sli.do #cse121

BEFORE WE START

Talk to your neighbours:

What's your favourite spot on the ave?

Music: 121 25wi lecture playlist

Instructor: Matt Wang

TAs: Ailsa, Alice, Chloë, Christopher, Ethan, Hanna, Hannah, Hibbah, Janvi, Judy, Julia, Kelsey, Lucas, Luke, Maitreyi, Merav, Ruslana, Samrutha, Sam, Shayna, Sushma, Vivian

Announcements, Reminders

- C2 due **Thursday, Feb 13th**
- R2 due **Thursday, Feb 13th**
  - note: this is the last time C0 is eligible for resubmission!
- Quiz reminders:
  - Quiz 0: tomorrow **Thursday, Feb 13th**
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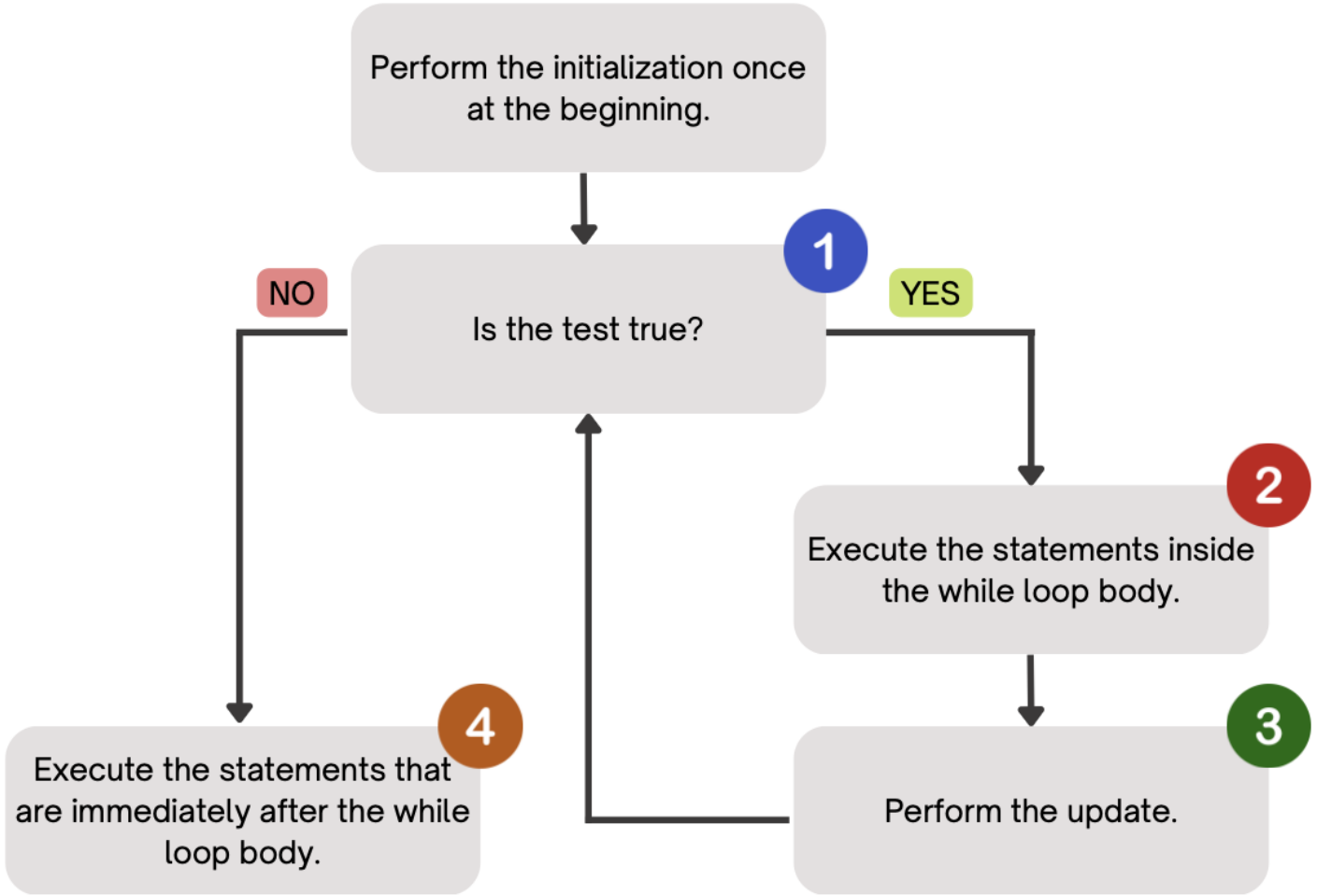
  - sick? **do not come to your quiz.**

    instead, **email me, *before* the start of your quiz section.**

PCM Review: while loops

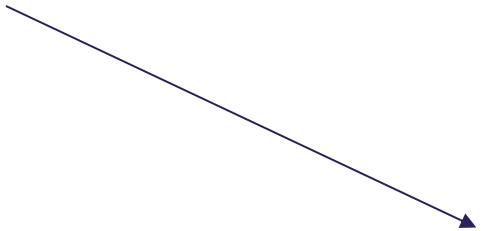
```
while (test) {
    body (statements to be repeated)
}
```

Repeatedly executes its body **as long as** the logical test is true.



for loops are while loops?

```
for (int i = 0; i < bigYikes; i++) {
  // ...
}
```

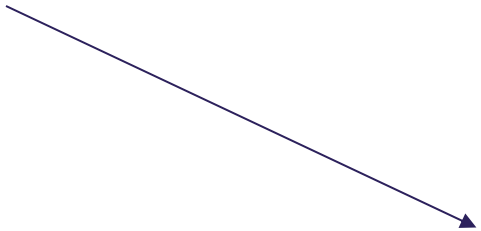


```
int i = 0;
while (i < bigYikes) {
  // ...

  i++;
}
```

for loops are while loops! (almost*)

```
for (int i = 0; i < bigYikes; i++) {
   // ...
}
```



```
int i = 0;
while (i < bigYikes) {
   // ...

   i++;
}
```

*as a technical note, these aren't exactly the same – there are some minor technical details that are different, most notably the scope of `i` is different in the two loops

`for` loops vs. `while` loops 

For loops and while loops are quite similar! This is the first (but certainly not the last) time where you need to decide which to use!

There's not always a "correct" answer, but some advice:

- is the condition definite or indefinite
- phrasing the problem out loud!
  - "I will do __ X times" or "for each __ I will __" – sounds like for!
  - "I will do __ until" or "while __ is true, I will" – sounds like while!
- it's okay to change your mind after you try one approach!

Common Problem-Solving Strategies

- **Analogy** – Is this similar to another problem you've seen?
- **Brainstorming** – Consider steps to solve problem before jumping into code
  - Try to do an example "by hand" → outline steps
- **Solve sub-problems** – Is there a smaller part of the problem to solve?
- **Debugging** – Does your solution behave correctly?
  - What is it doing?
  - What do you expect it to do?
  - What area of your code controls that part of the output?
- **Iterative Development** – Can we start by solving a different problem that is easier?

Practice: Think

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```
public static void mystery(Random randy,
                           int lucky) {

  int roll = -1; // "priming" the loop
  int x = -1;

  while (roll != lucky) {
    roll = randy.nextInt(20) + 1;
    if (x < roll) {
      x = roll;
    }
  }
  System.out.println("Lucky number "
                     + roll);
}
```

How would you describe what the variable x calculates?

A. The largest value rolled
B. The smallest value rolled
C. The last value rolled
D. The first value rolled
E. The sum of all values rolled

Practice: Pair

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```
public static void mystery(Random randy,
                           int lucky) {

  int roll = -1; // "priming" the loop
  int x = -1;

  while (roll != lucky) {
    roll = randy.nextInt(20) + 1;
    if (x < roll) {
      x = roll;
    }
  }
  System.out.println("Lucky number "
                     + roll);
}
```

How would you describe what the variable x calculates?

A. The largest value rolled
B. The smallest value rolled
C. The last value rolled
D. The first value rolled
E. The sum of all values rolled

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