CSE 11
Accelerated Intro to Programming
Discussion Section 6

Ayon Biswas, Spring 2021

Loops
Example ← Classes
          interface
          loops

PA6
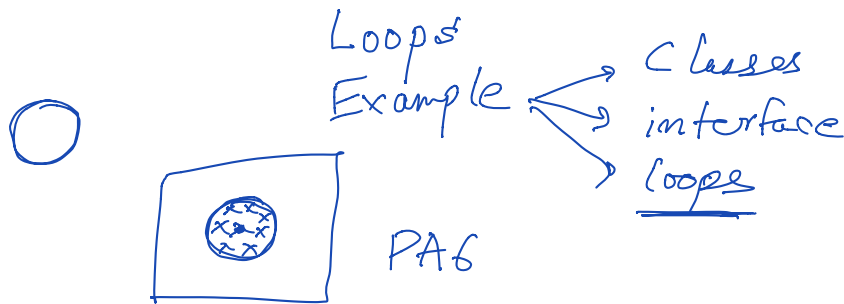
Logistics

- PA5 due today at 11:59PM
- PA6 Released
- Exam this week - Thursday 8am - Sunday 8am (PST)

For-in loops

int[] = { 1, 3, 5 }

fixed order
size

- **run the body of their loops once per element in a given array**
- **follows the order that they appear in the array, with the "loop variable" assigned to that element**
- **Their syntax looks like:**

```
for (/* element type */ /* variable name */ : /* array */) {

    /* loop body */

}
```

Example :

```
String[] messages = {"Hello", "CSE11"};

for (String message: messages) {

    System.out.println(message);

  }
```
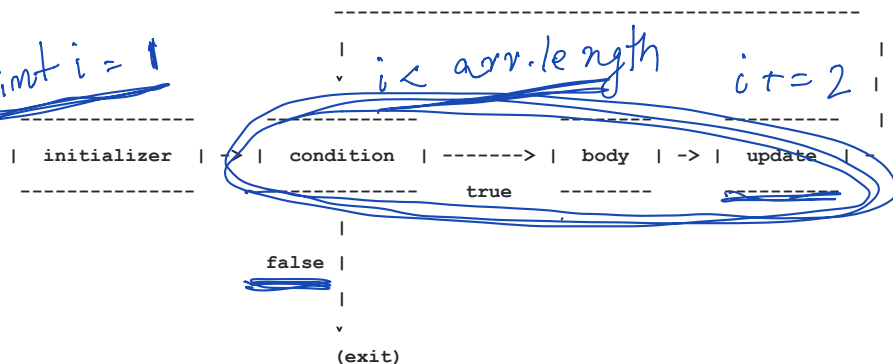
prints

```
Hello

CSE11
```

Counted for loops

- **More fine grained control compared to for-in loops - these are not limited to running once per element in an array**
- **Their syntax looks like:**

```
for (/* initializer */; /* condition */; /* update */) {
    /* body */
}
```

-

int[] arr = { 1, 3, 5, 7, 10 }

int i = 1

```
          -------------------------------------------------
          |         i < arr.length              i += 2   |
          |                                              |
---------------    -------------            -----------
|  initializer  | -> |  condition  | -------> |  body  | -> |  update  |
---------------    -------------     true    ----------
                          |
                   false  |
                          |
                          v
                       (exit)
```

Counted for loops → Nested for loops

- **body of counted for loops contain other can contain multiple Java statements, including multiple method calls, variable definitions and updates, if statements, and even other loops**

```java
// Start with the top header of the table
String result = "\t1\t2\t3\t4\t5\n";

for (int i = 1; i <= 5; i += 1) {
    // Print the left header
    result += i;

    // Print the row
    for (int j = 1; j <= 5; j += 1) {
        result += "\t" + (i * j);
    }

    // Add a newline to finish the row
    result += "\n";
}

System.out.println(result);
```

i = 2

inner for-loop

outer for loop

print the times table for i

Prints the times table from 1 to 5 to the terminal:

	1	2	3	4	5	index
1	1	2	3	4	5	
2	2	4	6	8	10	
3	3	6	9	12	15	
4	4	8	12	16	20	
5	5	10	15	20	25	

PA6

- https://github.com/CSE11-SP21-Assignments/cse-11-sp21-pa6-starter

Thanks!