DO-WHILE LOOP

zyBook 5.4

@ Dr. Jessica Young Schmidt and NCSU Computer Science Faculty

DO–WHILE LOOPS

- Loop will execute 1 or many times.

- Indefinite Loops: do NOT know how many times the loop will run (repeat task)

- In order to avoid an infinite loop, within the controlled statements an update should occur such that test will eventually evaluate to false.

```
do {
    <controlled statement>;
    <controlled statement>;
    ...
    <controlled statement>;
} while (<test>);
<statement>;
```

Example: Write a program prints the multiples of three that are less than or equal to 20.

```java
public class MultiplesOfThree {
  public static void main(String[] args) {
      int val = 3;
      do {
        System.out.println(val);
        val += 3;
      } while (val <= 20);
      System.out.println("Done.");
  }
}
```

```
$ javac -d bin -cp bin
          src/MultiplesOfThree.java
$ java -cp bin MultiplesOfThree
3
6
9
12
15
18
Done.
```

val = 3
print out 3
val = val + 3   // 6

val <= 20 ? Yes
print out 6
val = val + 3   // 9

...

val <= 20 ? Yes
print out 18
val = val + 3   // 21

val <= 20 ? No
print out "Done."

EXAMPLE

How many times will the loop execute? Output?

```java
public class DoWhileExample {

    public static void main(String[] args) {
        int x = 57;
        do {
            System.out.println(x % 5);
            x = x / 5;
        } while (x > 0);
    }

}
```

x = 57

print out 57 % 5   // 2
x = 57 / 5   // 11

x > 0? Yes, print out 11 % 5   // 1
x = 11 / 5   // 2

x > 0? Yes, print out 2 % 5   // 2
x = 2 / 5   // 0

x > 0? No

Output:
2
1
2

Executed 3 times

USAGE OF DO-WHILE LOOPS

- Need to do something at least once
  - User will play a guessing game at least once
  - When a person opens a bank account, they will deposit money at least once
- Do not need to prime values prior to loop
  - Controlled statements are guaranteed to execute at least once
- Remember to keep tested variables in scope
  - Declare outside of control structure