Iteration

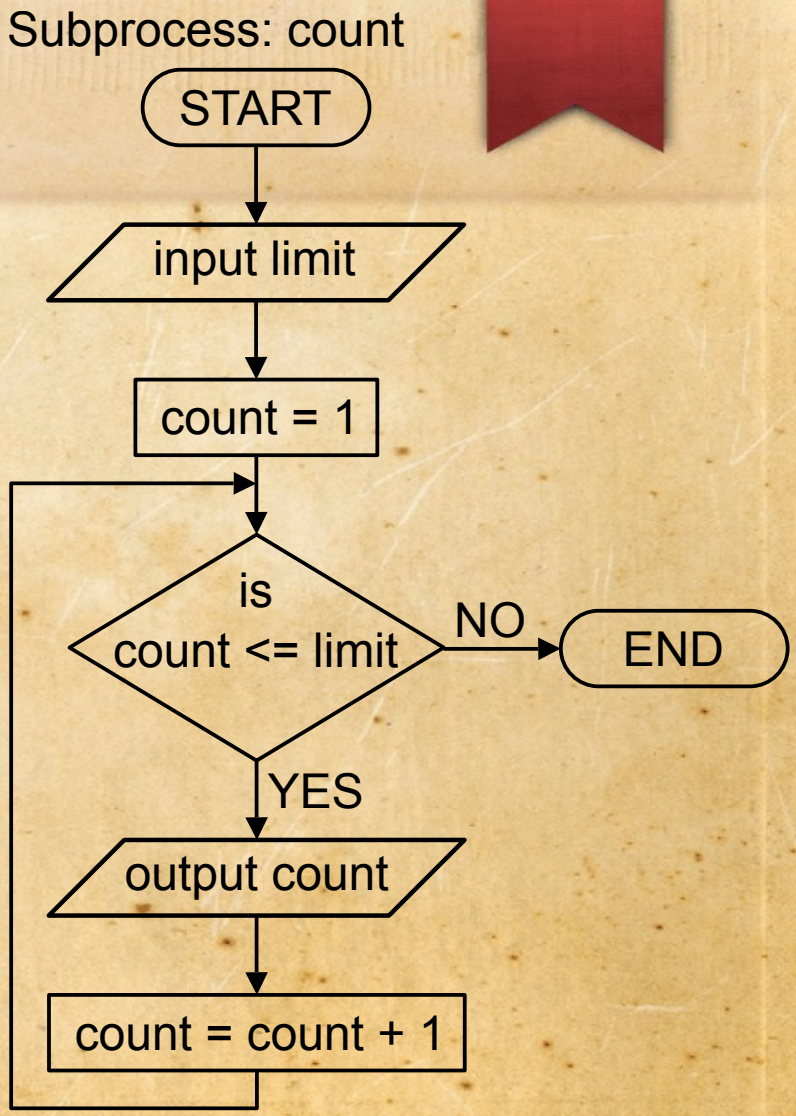
The `while` loop

Lecture Contents

- The `while` statement
- Practice

`while` loop

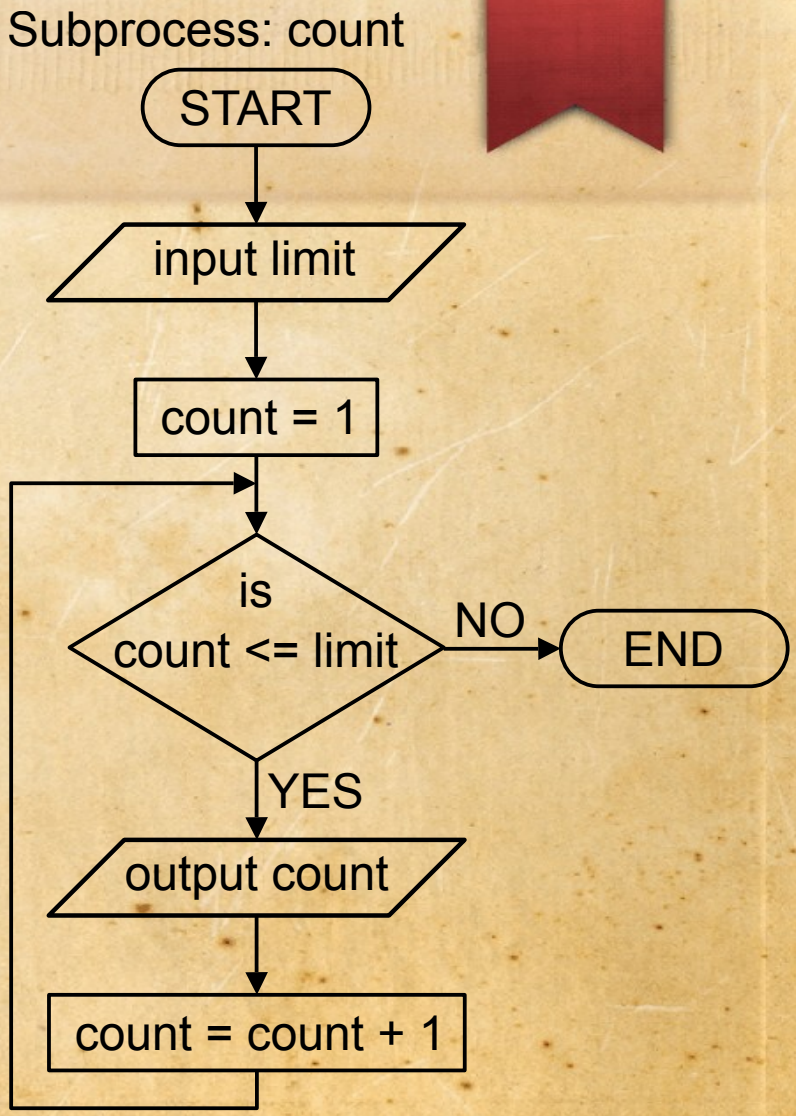
- Iteration is the process of repeating a set of instructions or actions.
- In programming, iteration repeats a block of code until a condition is met.
- Consider the algorithm represented by this flowchart.
  - What is the result of following this algorithm?



`while` loop

- The algorithm represented in the flowchart can be converted into the following Java code:

```
public static void count(int limit) {
    int count = 1;
    while(count <= limit) {
        System.out.println(count);
        count += 1;
    }
}
```



`while` loop

- Adding a main process and executing the Java code gives us the following output:

```
public static void main(String[] args) {
   count(5);
}

public static void count(int limit) {
   int count = 1;
   while(count <= limit) {
      System.out.println(count);
      count += 1;
   }
}
```

```
1
2
3
4
5
```

Practice

- Write a method
  - That repeatedly prints a character a variable number of times

```
public static void main(String[] args) {
   printCharRepeatedly('a',5);
}
public static void printCharRepeatedly(char c, int numTimes) {
   //TODO: Write the code for this method.
}
```

```
aaaaa
```

Practice

- Write a method
  - That repeatedly prints a character in a grid of size x,y

```
public static void main(String[] args) {
   printCharGrid('b',10,4);
}
public static void printCharGrid(char c, int x, int y) {
    //TODO: Write the code for this method.
}
```

```
bbbbbbbbbb
bbbbbbbbbb
bbbbbbbbbb
bbbbbbbbbb
```

Iteration

The `while` loop