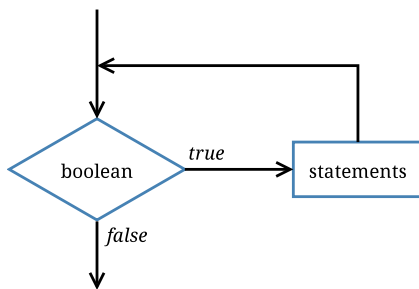


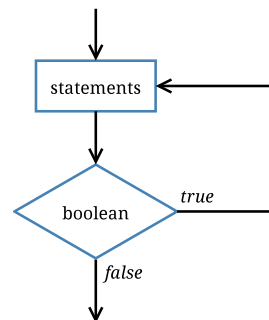
Model 1 While Loops

A loop is a set of instructions that are to be repeated. All loops have three main components: *initialize*, *test*, and *update*. Identify these components in each of the examples below.

```
// pre-test loop
number = 1;
while (number <= 10) {
    System.out.println(number);
    number++;
}
```



```
// post-test loop
number = 1;
do {
    System.out.println(number);
    number++;
} while (number <= 10);
```



Questions (20 min)

Start time:

1. Which loop component always happens first? Why?
2. Explain why the `while` loop is called a *pre-test* and the `do while` loop is called a *post-test*.
3. What is output to the screen by each loop? Predict the output first, and then run the code to check your answer.

4. What is the final value of number at the end of each loop? Make a prediction first, and then add print statements to the code to check your answer.

5. How does the output change if you swap the println and number++ statements?

6. What is the output to the screen if you remove the number++ statement?

7. What is the difference between a while statement and an if statement?

8. What is output by the following loop? Explain how the code works.

```
number = 99;
do {
    System.out.println(number);
    number++;
} while (number <= 10);
System.out.println(number);
```

9. What is output by the following loop? And what mistake was made?

```
int i = 0;
while (i < 3)
    System.out.println("i = " + i);
    i = i + 1;
```