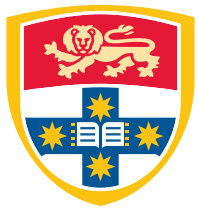
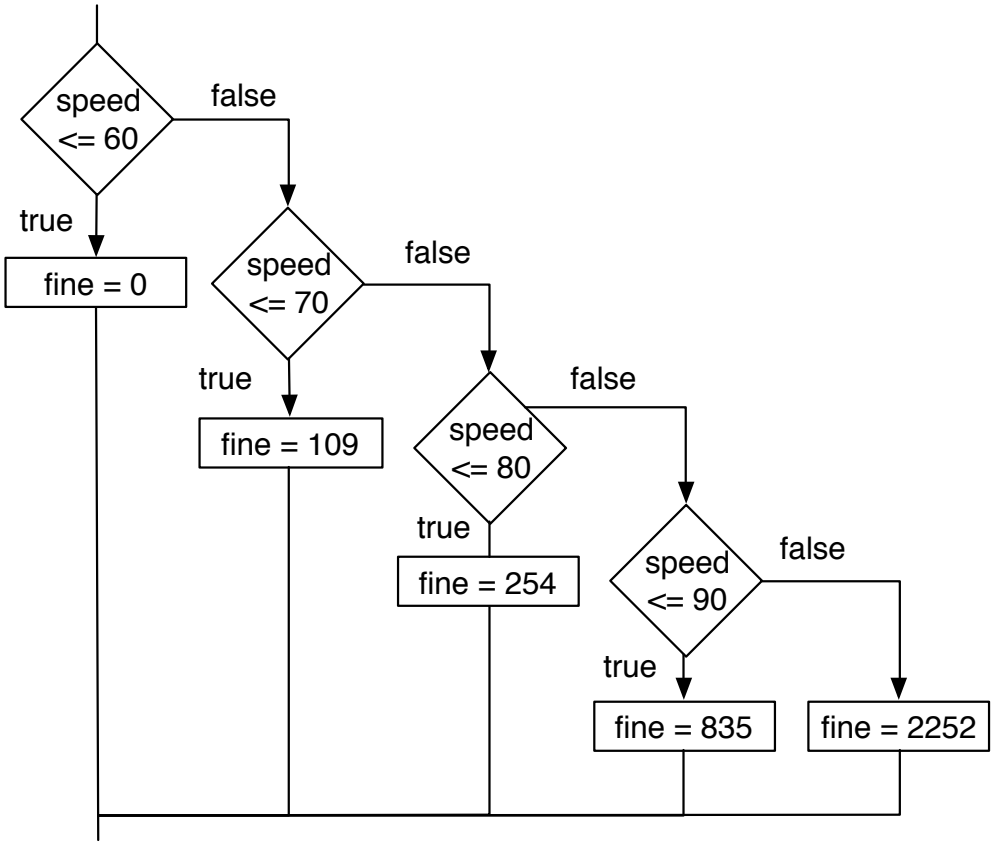
INFO1103: Introduction to Programming

School of Information Technologies, University of Sydney

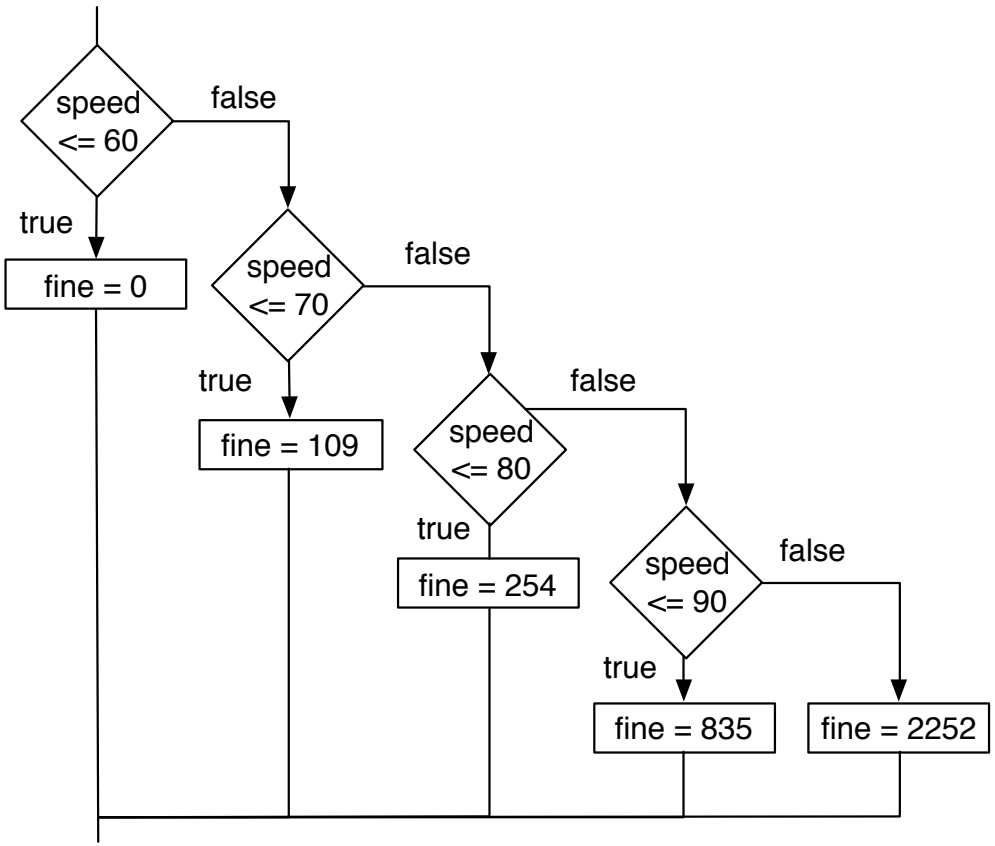


Previously in INFO1103...`if...else if`



Previously on INFO1103...`if...else if`

How many possible paths of code?



Lecture 6: While loops

Using a while loop; break

`while`

Syntax: `while` *(condition) statement*

> "While the *condition* is *true*, repeat what's in the *statement*."

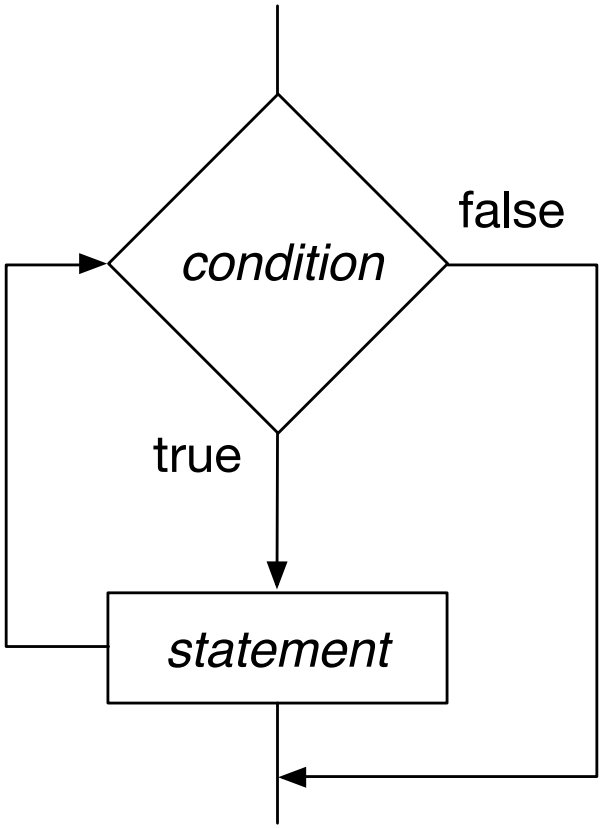
Steps of `while`:

```
1    while (condition) do
2    ·    statement
```

1. *condition* is checked: if it is *true* then go on to Step 2
2. *statement* is executed, then go on to Step 1

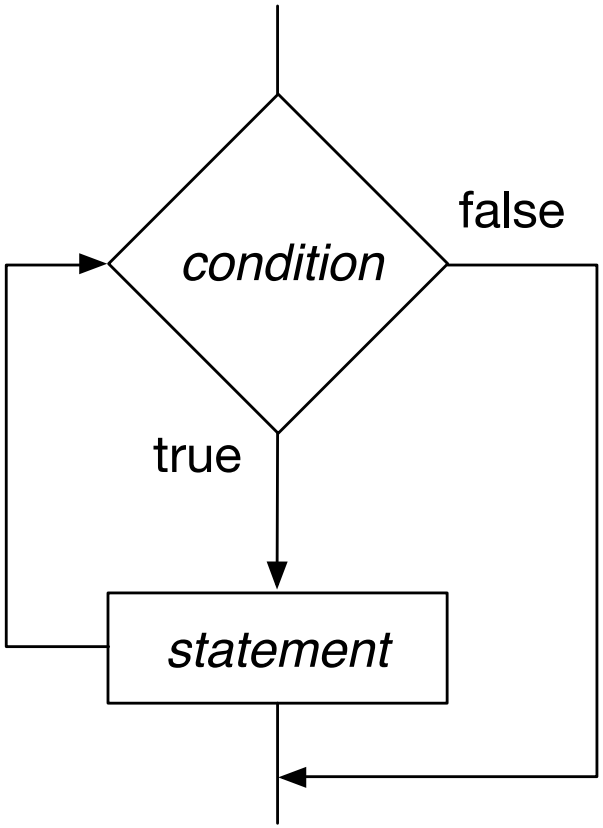
The `while` loop continues until *condition* is checked at Step 1 is *false*.

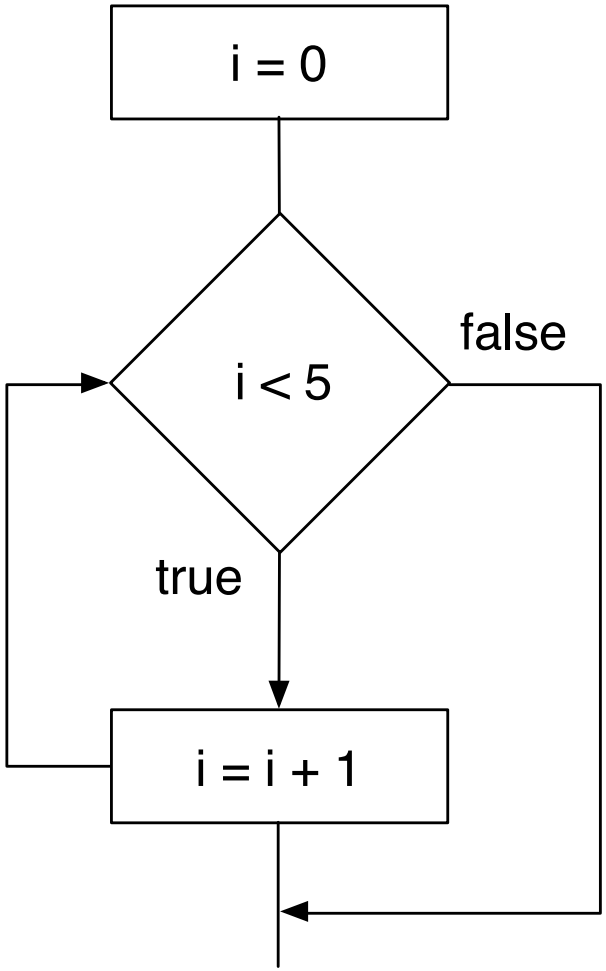
`while` loop diagram

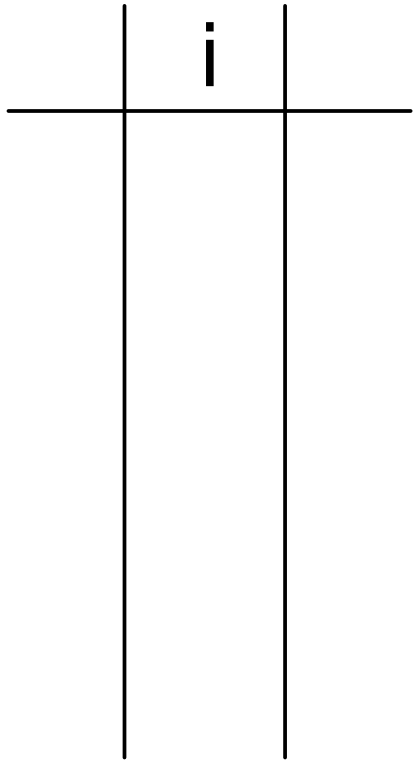


1. begin with the *condition*
2. check the *condition*
3. if it's true, execute the *statement*; otherwise, exit the loop
4. go back to the *condition*

`while` loop example

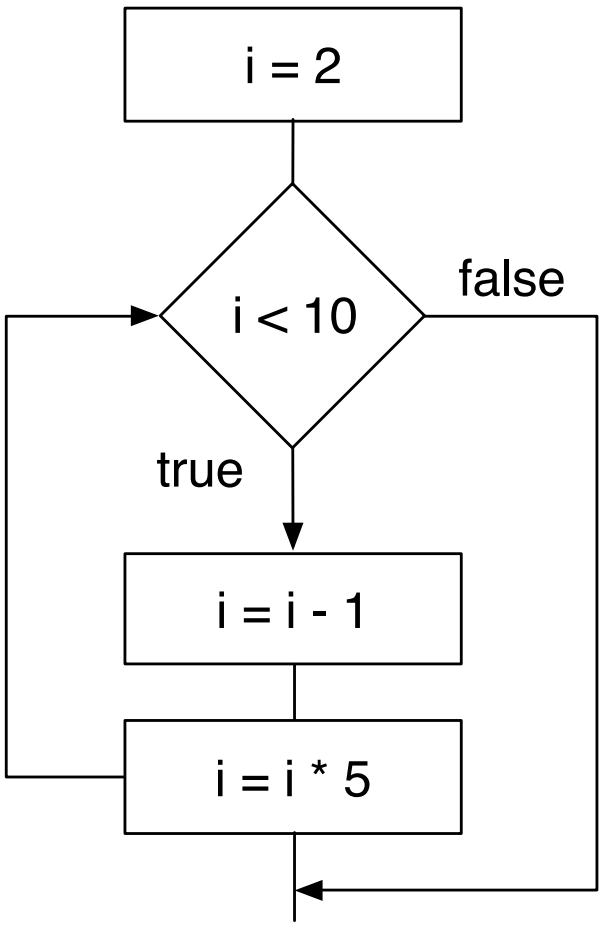




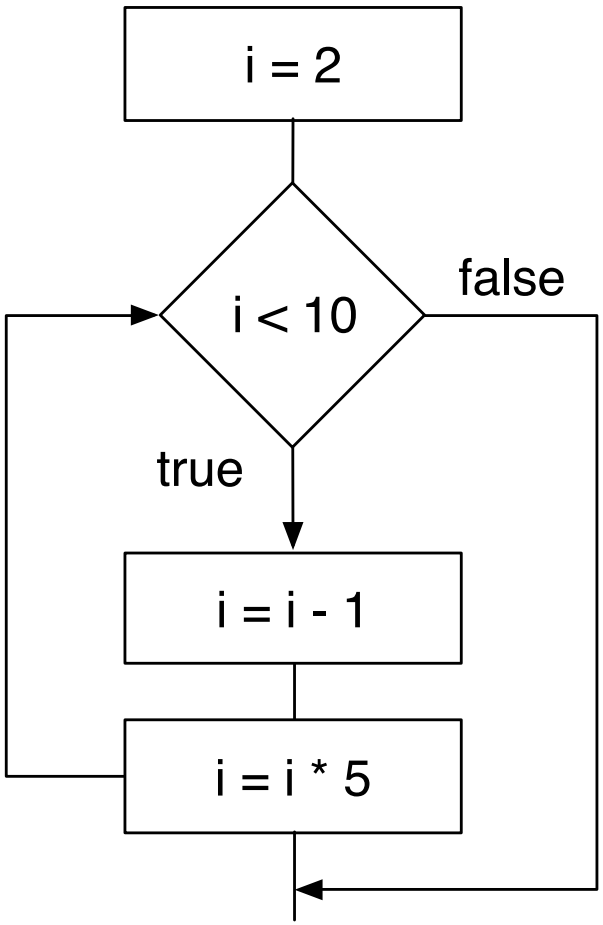


`while` loop diagram to code

code?



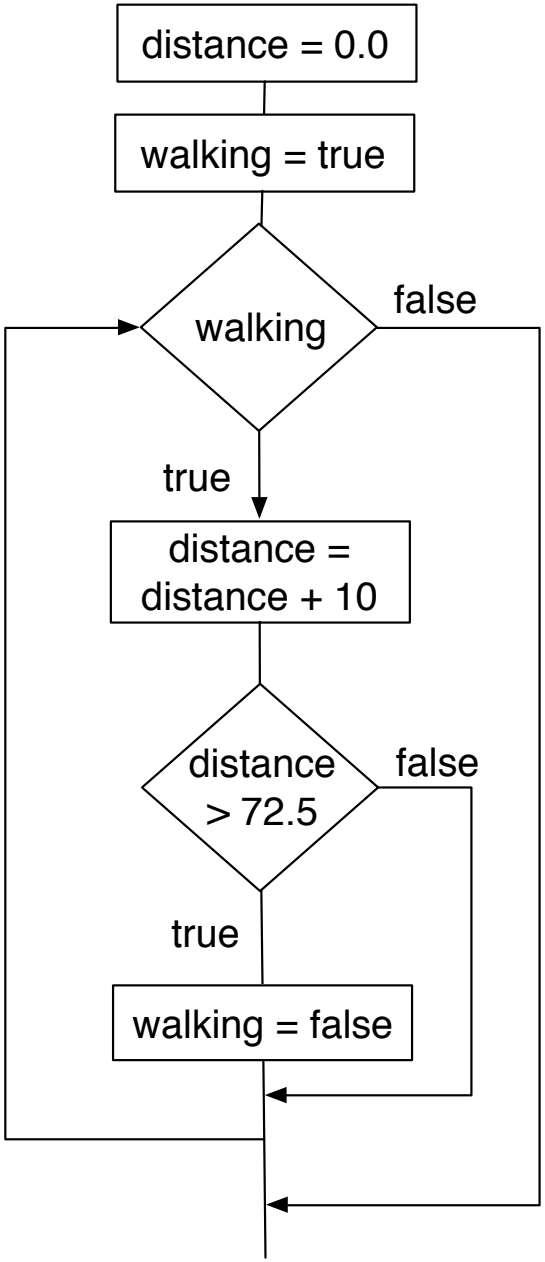
`while` loop desk checking



What is the final value of i?

How many iterations will there be in total?

`while` loop desk check



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0	T

while example

```
1  public class SandBucket {
2      public static void main(String [] args) {
3
4          double bucketCapacity = 5.0;
5          double bucketFilled = 0.0;
6          double sandHandful = 0.20;
7
8          while (bucketFilled < bucketCapacity)
9          {
10             bucketFilled = bucketFilled + sandHandful;
11             System.out.println("bucketFilled = " + bucketFilled);
12         }
13     }
14 }
```

How many iterations?

while (true)

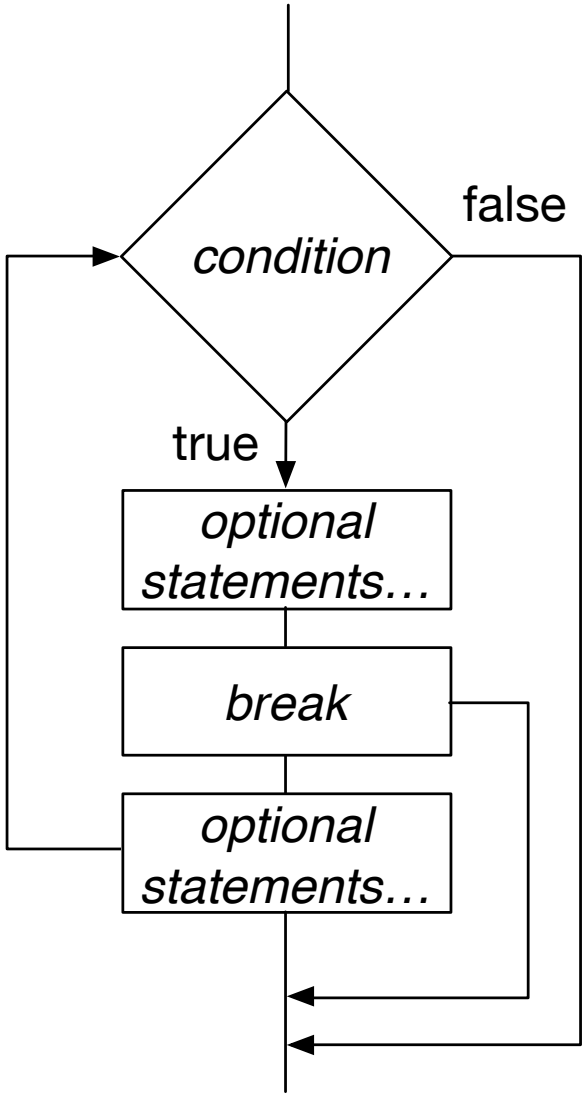
`while (true)` would imply an infinite loop

```
1  public class NaturalNumbers {
2      public static void main(String [] args) {
3          int number = 1;
4          while (true) {
5              System.out.println(number);
6              number = number + 1;
7          }
8      }
9  }
```

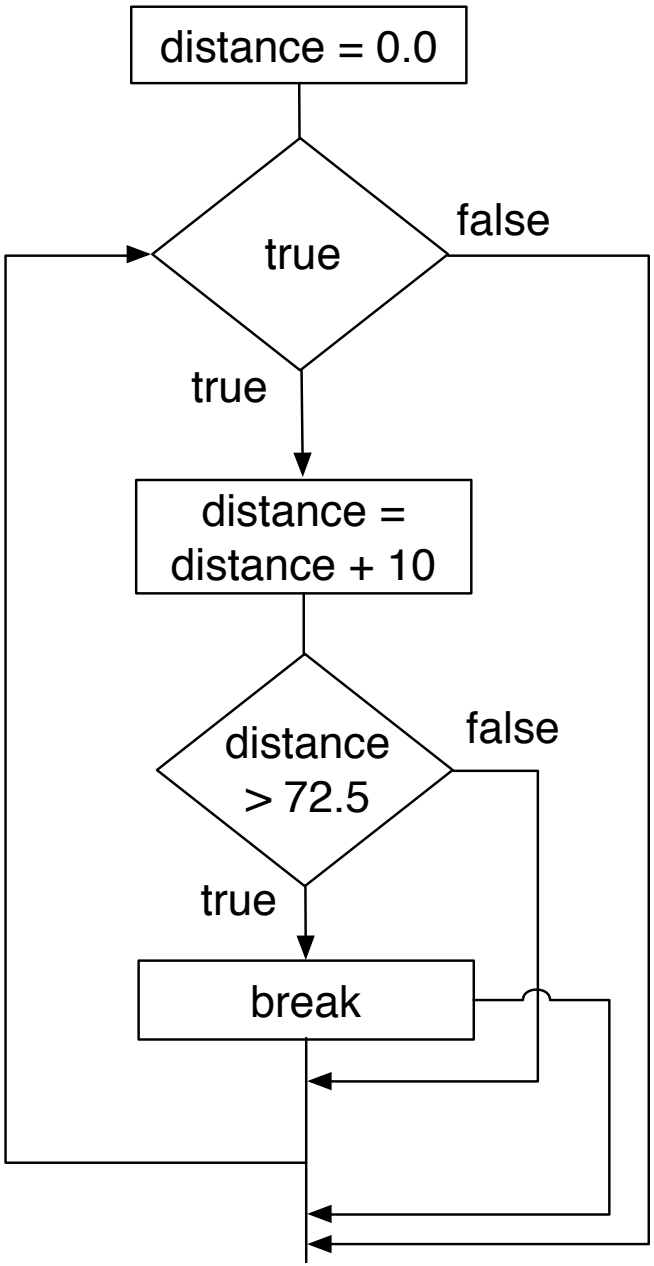
`break;` is a statement used to leave the body of a loop

`break`

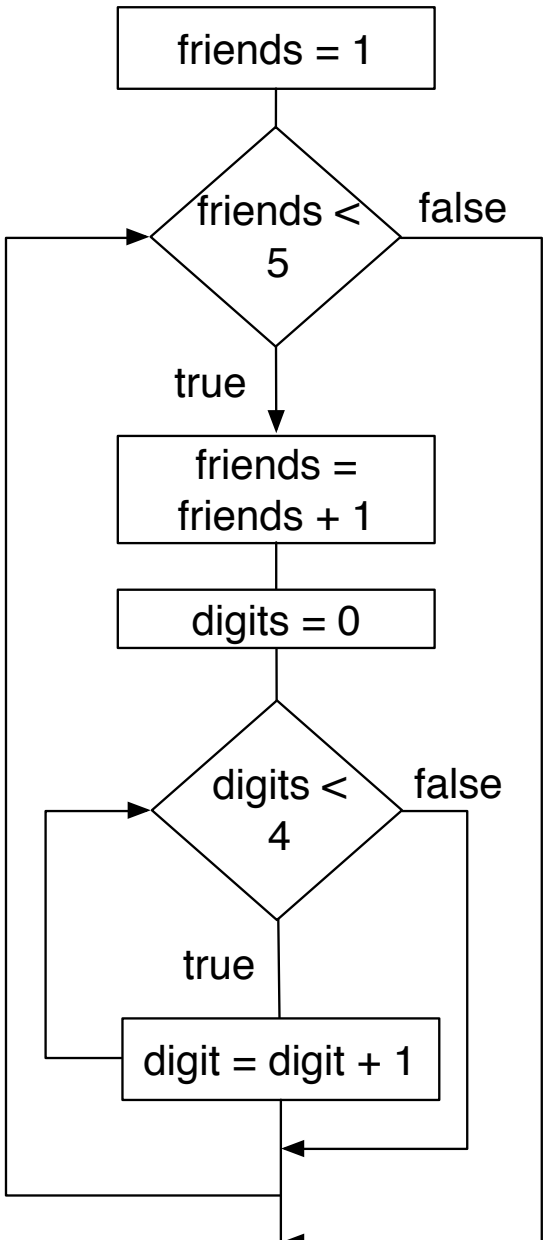
- `break` is a special reserved word
- When used in loops, it means "break from the current iteration of this loop"
- It isn't allowed in an `if` statement.



break example



Nested loop example



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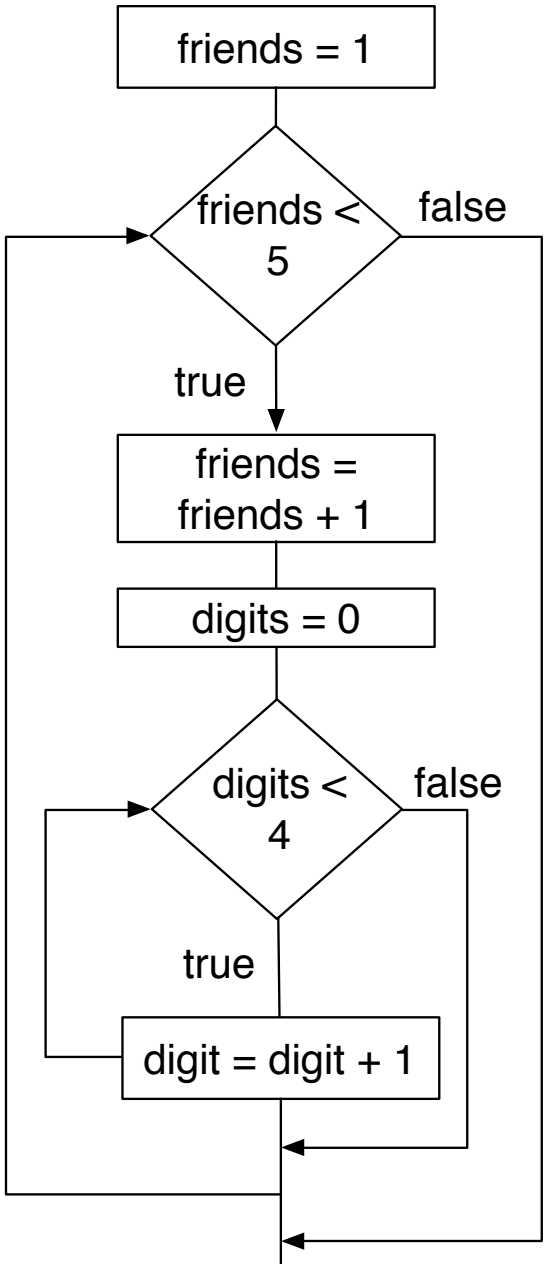
Nested loop example



programming exercise

Write a program to describe a fisherman's catch. Each time a fish is caught it is first weighed, then thrown in a bucket. Your program will keep track of how many fish are caught and the total weight of the bucket. If the bucket exceeds a certain heavy weight the fisherman will stop fishing. The program will display the number of fish caught and the total weight.

programming exercise (cont.)