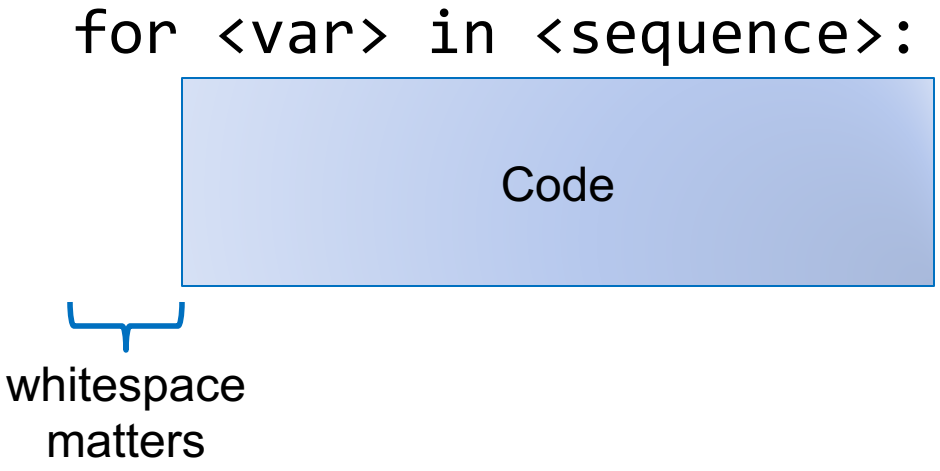
Lecture 5: While Loops

CS 51P

September 18, 2023

Review: for loops

- When you want some set of statements to execute repeatedly . . . once for each element in a sequence.



What about…

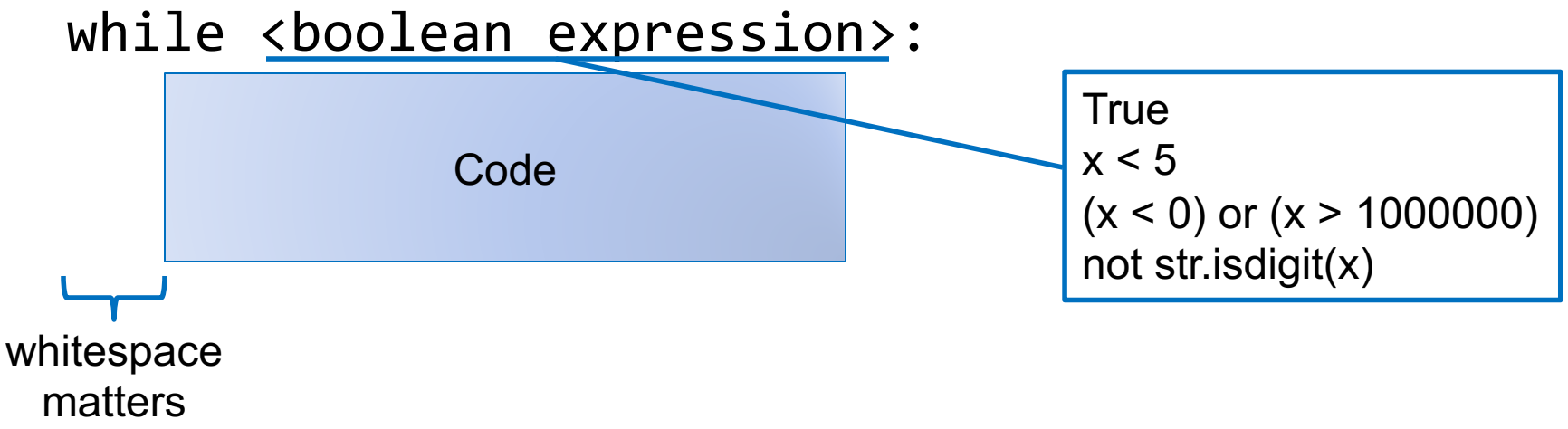
- What if we wanted a program that asks the user for a positive number and keeps asking until the user enters a positive int, then prints "Thanks!"

- Example run

```
what's your favorite positive int?
   -10
That's not a positive int! Try again:
   hello
That's not a positive int! Try again:
   13
Thanks!
```

while loops

- When you want some set of statements to execute repeatedly . . . until some stopping criteria is met.



Example

- Write a program that asks the user for a positive number and keeps asking until the user enters a positive int, then prints "Thanks!"

- Example run

```
Enter a positive integer:
   -10
That's not a positive integer! Try again:
   hello
That's not a positive integer! Try again:
   13
Thanks!
```

Exercise

Write a program that prompts user for a password, repeating until the correct password is entered, then prints "Login Successful".

Assume that the correct password is "123456"

Example

Write a program that asks the user for a positive integer and then counts down from that value to `1` (all on one line!) and then prints "GO!" on the next line. For example, if the user enters 5, it should print:

```
5, 4, 3, 2, 1
GO!
```

Exercise

Using a while loop, write a program that asks the user for word and a number, then prints the word followed by ! that many times, each on its own line. For example:

```
Enter a word:
    happy
Enter a pos int:
    3
happy!
happy!
happy!
```

Exercise

Write a program that asks the user for a positive integer and then prints the sum of the odd values between 1 and n.

For example, if the user enters 5, it would print 9 (since 1 + 3 + 5 == 9)

Bonus Exercise

Write a program that asks the user for a positive integer and then prints the value $1^2 + 2^2 + \cdots + n^2$