

The if-statement

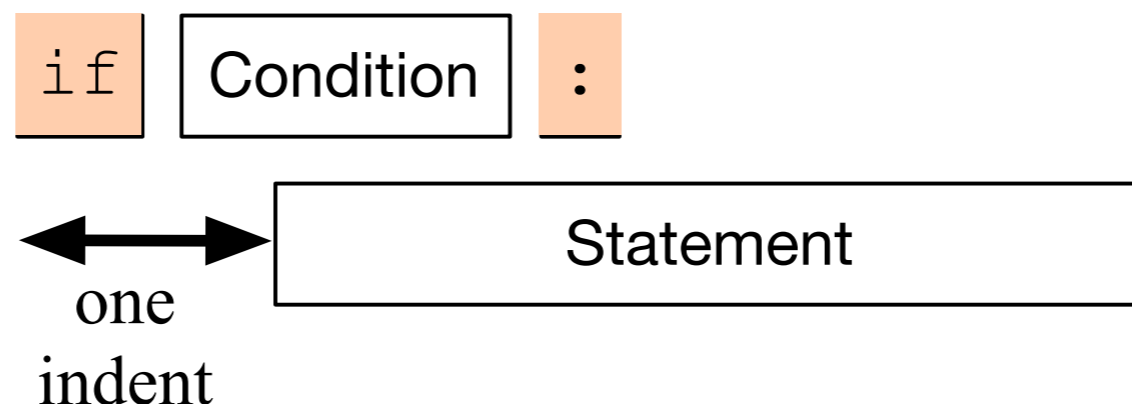
Thomas Schwarz, SJ

Conditional Execution

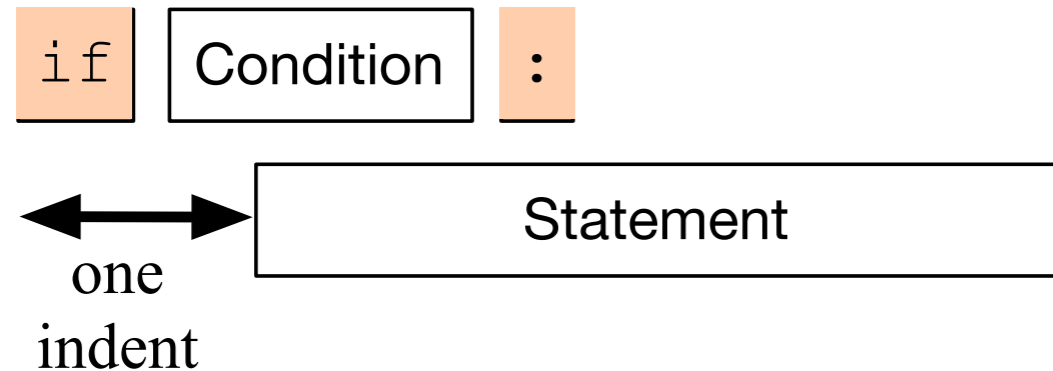
- Straight line programs are very limited
 - We need the capability to react differently to input or conditions that arise during processing
 - We need to be able to repeat
 - Combining these two, we need to be able to repeat flexibly

Conditional Statements

- Sometimes a statement (or a block of statements) should only be executed if a condition is true.
- Conditional execution is implemented with the if-statement
- Form of the if-statement:



Conditional Statements



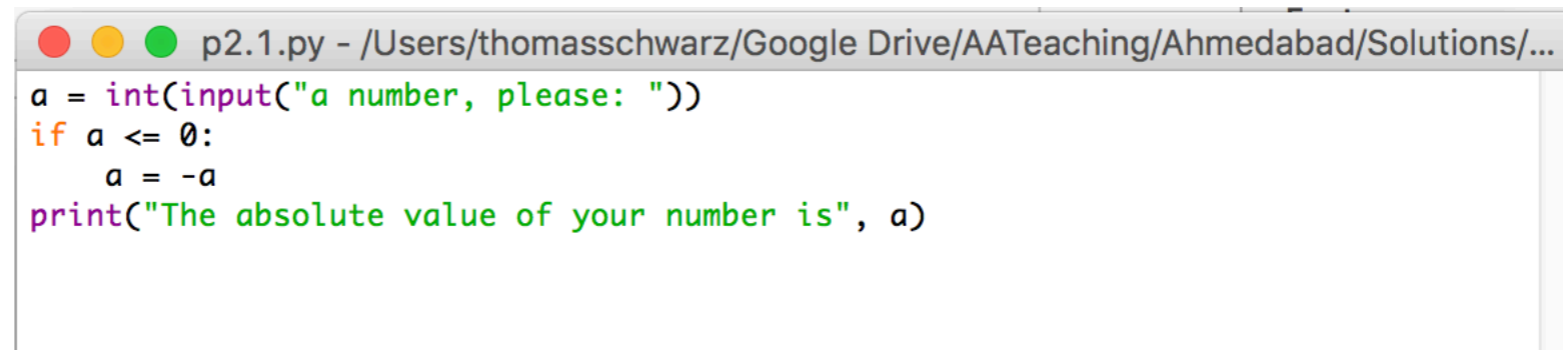
- `if` — is a keyword
- Condition: a Boolean, something that is either True or False
- Statement: a single or block of statements, all indented
 - Indents are tricky, you can use white spaces or tabs, but not both. Many editors convert tabs to white spaces
 - The number of positions for the indent is between 3 and 8, depending on the style that you are using. Most important, keep it consistent.

Example

```
● ● ● p2.1.py - /Users/thomasschwarz/Googl  
a = int(input("a number, please: "))  
if a < 5:  
    print("that is a small number.")
```

- First line asks user for integer input.
- Second line checks whether user input is smaller than 5.
- In this case only, the program comments on the number.

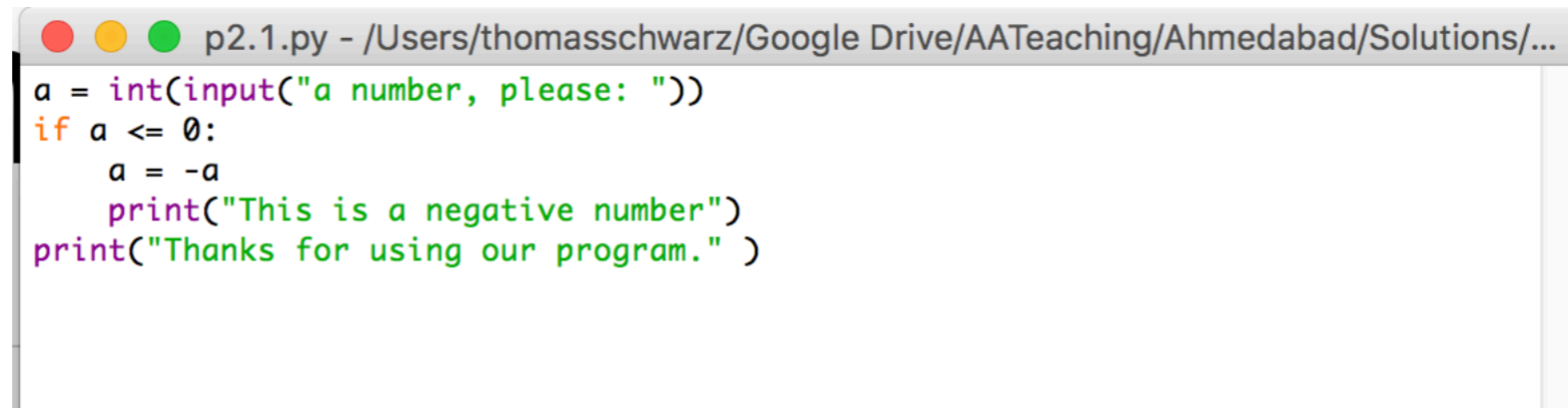
Example



```
p2.1.py - /Users/thomasschwarz/Google Drive/AATeaching/Ahmedabad/Solutions/...  
a = int(input("a number, please: "))  
if a <= 0:  
    a = -a  
print("The absolute value of your number is", a)
```

- Here we calculate the absolute value of the input.
- The third line is indented.
- The fourth line is not, it is always executed.

Example



```
p2.1.py - /Users/thomasschwarz/Google Drive/AATeaching/Ahmedabad/Solutions/...  
a = int(input("a number, please: "))  
if a <= 0:  
    a = -a  
    print("This is a negative number")  
print("Thanks for using our program." )
```

- Here, lines 3 and 4 are indented and are executed if the input is a negative integer.
- The last line, line 5, is always executed since it is not part of the if-statement