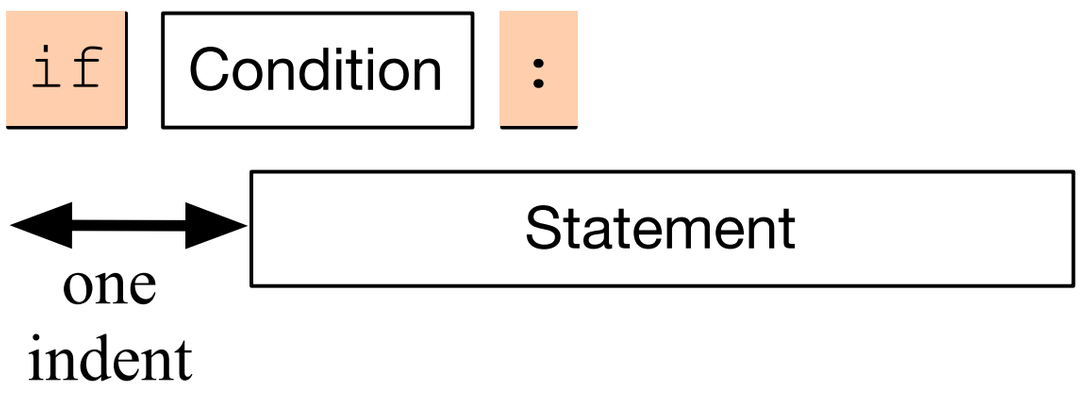
Conditional Statements

Python

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:



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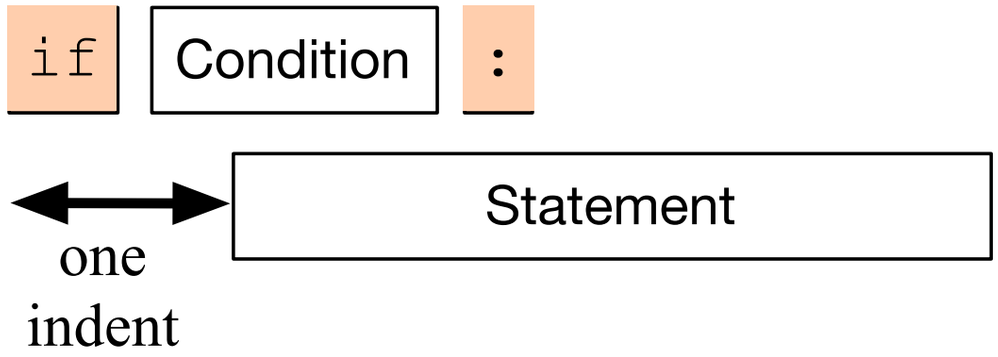
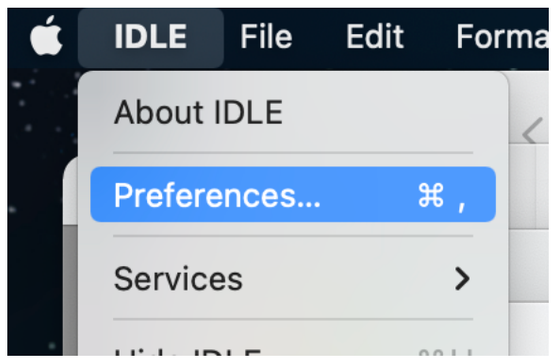


- if — is a keyword
- Condition: a Boolean, something that is either True or False
- Statement: a single or block of statements, all indented
    - Indents are tricky, you can use white spaces or tabs, but not both. Many editors convert tabs to white spaces
    - The number of positions for the indent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

Conditional Statements

- Indentation in Python matters — a lot
  - This is a source for derision, or of clarity
  - You can set your preference for indentation in
    - IDLE —> Preferences
      - Preferences —> Window



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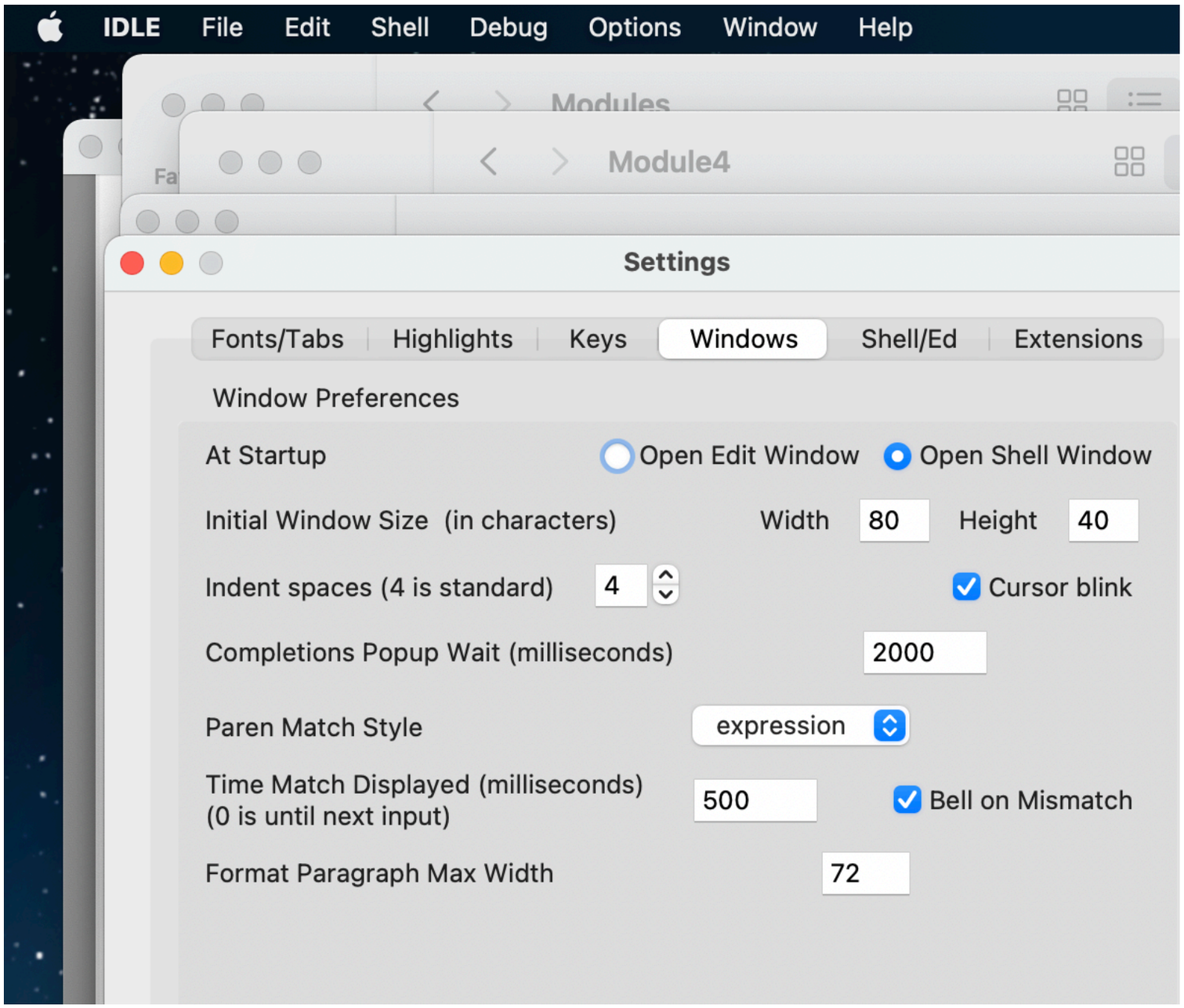

Conditional Statements

- Python style guidelines:
  - Prefer spaces over indent
    - Many editors will do this automatically
    - **Cannot** mix spaces and indents
- Standard size of indent is 4
  - But there are some who claim 8 is better
  - Definitely **not** use something smaller than 3

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

Example

- Testing for even-ness / oddity
  - Use the modulo operator %
    - `a % b` is the remainder of division of `a` by `b`
      - Is even defined for floating point numbers:
        - Find the largest multiple of `b` smaller than `a`
        - Then subtract this multiple from `a`
      - Try to restrict use to positive integers so that you do not have to understand the position