

# Python Extended

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# Overview

- ★ Control Flow
- ★ Functions
- ★ Data Structures
- ★ Classes
- ★ Recursion
- ★ Debugging
- ★ Simple Algorithms



# Control Flow

- What is control flow?
- Control Flow tools
- If-Else statement
- If-Elif-Else statement
- Loops (while,for)
- Break statement
- Continue statement
- Pass statement

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# Functions

- What exactly are functions?
  - Basic structure
  - Writing functions
  - Calling a function
  - Returning values from a function
  - Pass by reference vs value
  - Function arguments
  - Anonymous functions
  - Scope of variables
  - Generator functions and expressions
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# Data Structures

- Lists
  - Advanced list functions
  - Nested Lists
  - Lists as stacks and queues
  - Tuples and sequences
  - Sets
  - Dictionaries
  - Special functions, looping techniques, conditions and comparison
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# Classes

- Defining classes
- Adding attributes
- Inheriting methods and attributes

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# Recursion

- Recursive functions in python:  
Factorials
- Advantages of recursion
- Disadvantages of recursion
- Getting started
- Recursion vs Iteration
- Towers of Hanoi problem

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# Debugging

- Entomology
- Before debugging: Strategy
- Common error messages
- Syntax Errors
- Runtime Errors

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# Simple Algorithms

- Linear Search
- Binary Search
- Comparison between linear and binary search

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**Time to apply all that we have  
studied!!**

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