Python Application Development

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Topics Covered in this course

- 1. Introduction to Python
- 2. Data Structures
- 3. Functions
- 4. Modules and Libraries
- 5.<u>OOP</u>
- 6. Testing / Debugging

- 7. Functional Programming
- 8. Text Handling
- 9. GUI Development
- 10. Graphics Programming
- 11. Algorithms in Python
- 12. Web Development

Before we start...

We will learn how to use mercurial and use it for any code we write in this course.

This will keep a history of whatever we did for this course.

So, First – An Introduction to Mercurial.

Before we start...

And our editor will be eclipse...

Eclipse + Pydev installation. Keyboard Shortcuts.

Key Press	Action
Ctril+/	Comment out selection
Alt+W->Preferences	Change Keybindings + Everything else
F ₁₁	Debug
Ctrl + E	Move among tabs
F ₃	Jump to declaration
Ctrl+W	Close Tab
Ctrl+L	Jump to Line number
Ctrl+M	Maximize current window
Tab / Shift+Tab	Shift Selection Right / Left
Ctrl + Spacebar	Autocomplete

Introduction to Python

- 1. Getting/Installing Python
- 2. History
- 3.Uses
- 4. When not to use Python
- 5.Invoking the Interpreter
- 6.Interactive Mode
- 7. Getting help
- 8. Eclipse + Pydev Setup
- 9.Hello World
- 10. Creating Programs
- **11.**Running Programs

- 12. Python Statements
- 13. Comments
- 14. Variables
- 15. Keywords
- 16. Upper/Lower Case
- 17. Looping techniques
- 18. Indentation
- 19. Conditionals
- 20. Relations
- 21. Printing
- 22. User Input
- 23. pass
- 24. Long lines

Introduction to Python

- 25.Numbers
- 26.Booleans
- 27.Strings
- 28.Lists
- 29.While
- 30.lf
- 31.For
- 32.Range
- 33.Break
- 34. Continue
- 35.Pass
- 36.File IO

- 37. Exceptions and Error Handling
- 38. dir

Data Structures

- 1.Data types
- 2.None
- 3. Tuples
- 4. Dictionaries
- 5.Sets
- 6.Sequences
- 7. Iteration
- 8.Zip
- 9.Stacks
- 10.List comprehension
- 11. Assignment
- 12.Identity and References

- 13. Shallow and Deep Copies
- 14. Type Checking
- 15. Objects

Functions

- 1. Functions
- 2.Scripts
- 3. Definitions
- 4. Arguments
- 5. Calls
- 6.Keyword arguments
- 7. Mixed arguments
- 8. Return values
- 9. Variables
- 10. Assignment
- 11.Errors
- 12.Documentation Strings

- 13. Docstring Benefits
- 14. Exceptions
- 15. Catching errors
- 16. Finally
- 17. Program exit

Modules and Libraries

- 1. Modules
- 2.Executing Modules as Scripts
- 3. Search Path
- 4. Standard Modules
- 5.dir
- 6.Packages
- 7.Intra Package Refrences
- 8.___main___
- 9.Locating and Loading
- 10.Import
- 11.Sys
- 12.Command line args

- 13. Os
- 14. Environmental variables
- 15. Walking file systems
- 16. Shutil
- 17. Time
- 18. Datetime
- 19. Subprocess
- 20. Re
- 21. ElementTree
- 22. Binary data 10
- 23. Struct
- 24. Pickle

Modules and Libraries

- 25.Shelve
- 26.Sqlite3
- 27. Third Party modules
- 28.Installing modules
- 29. Setuptools
- 30. Distribute
- 31.Pip
- 32.logging

OOP

- 1. Scopes and Namespaces
- 2. Class Definition
- 3. Objects
- 4. Instance Objects
- 5. Method Objects
- 6.Inheritance
- 7. Private Variables
- 8.Exceptions
- 9. Iterators
- 10. Generators
- 11. Generator Expressions
- 12.Bound Methods

- 13. Class Variables
- 14. Static Methods
- 15. Class Methods
- 16. Properties
- 17. Accessors
- 18. __slots__
- 19. String Conversion
- 20. Item Access
- 21. __del__
- 22. Containment
- 23. Interfaces
- 24. Templates

OOP

- 25.__getattr__
- 26.__delattr__
- 27. Mixin classes
- 28.Weakref
- 29. Design Patterns
- 30.Factory
- 31.Observer
- 32. Proxy Classes

Testing / Debugging

- 1.Testing
- 2.Logging
- 3. Debugging
- 4.Doctest
- 5. Unittest
- 6.Py.test
- 7.Winpdb
- 8.__debug___
- 9.profiling

Functional Programming

- 1.lterators
- 2. Generators
- 3.Co-routines
- 4. Lambda Expressions
- 5.Map
- 6.zip
- 7. Itertools
- 8.Functools
- 9. Operator
- 10.Functional

Text Handling

- 1.Lxml
- 2.String
- 3.Re
- 4. Element Tree
- 5.xapian

GUI Development

1.pyqt – Rapid development using QT

Graphics Programming

- 1.QT+OpenGL
- 2. Blender Scripting (James McClain)

Algorithms in Python

- 1.Networkx
- 2. Multiprocessing
- 3. Matplotlib
- 4.SciPy

Web Development

- 1.Django
- 2. Project Setup
- 3. Model Layer
- 4. Admin Interface
- 5. Views and URLs
- 6. Authentication
- 7. Testing
- 8. Views and Form
- 9. Third Party Apps