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PYTHON

Course content

Beginning Python Programming – Essentials

Starting Python programming

Introduction to Python

Why Python as a first programming language?

Types of Python applications

What is source code?

How Python compiles and runs source code

Disk storage and main memory working together

How to use IDLE to develop programs

How to use the interactive shell

How to work with source files

How to compile and run a program

How to fix syntax and runtime errors

How to write your first programs

Introduction to Python coding

Coding statements

Coding comments

Using functions

Working with data types and variables

Assigning values to variables

Naming variables

Working with numeric data

Coding arithmetic expressions

Using arithmetic expressions in assignment statements

Using the interactive shell for testing numeric operations

Working with string data

Assigning strings to variables

Joining strings

Including special characters in strings

Using the interactive shell for testing string operations

Five basic Python functions

Using the print(), input(), int(), float(), round() functions

Chaining functions

Control statements

Boolean expressions

Relational operators

Logical operators

Comparing strings

Selection structure

if statements

Nested if statements

Iteration structure

while statements

for statements

break and continue statements

How to define and use functions and modules

Defining and using functions

Define and call a function

Define and call a main() function

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More skills for defining and using functions

Default values for arguments

Named arguments

Local and global variables

Creating and using modules

Create a module

Document a module

Import a module

Standard modules

The random module

Plan the functions of a program

Using a hierarchy chart

Test and debug a program

Testing and debugging

The three types of errors that can occur

Common Python errors

Four techniques for testing and debugging

Planning the test runs

A simple way to trace code execution

Using top-down coding and testing to simplify debugging

Using the IDLE shell to test functions

Use the IDLE debugger

Set and remove breakpoints

Step through the code

How to view the stack

The lists and tuples

Create a list

Get and set list items

Add and remove list items

Process the items in a list

Pass lists to functions

The list of lists

Create a list of lists

Process the items in a list of lists

More about lists

Count, reverse, and sort the items in a list

Using other functions with lists

Copy, slice, and concatenate lists

The tuples

Create a tuple

Get items from a tuple

Working with file I/O

Intro to file I/O

How file I/O works

Open and close a file

Using text files

Write a text file

Read a text file

Work with a list in a text file

Using CSV files

Write a CSV file

Read a CSV file

Modify the CSV format

Using binary files

Working with a binary file

Handling exceptions

Handle a single exception

How exceptions work

Using a try statement to handle one type of exception

Expanded contents

Handle multiple exceptions

Using a try statement to handle multiple exceptions

Get the information from an exception object

Two more skills

Using a finally clause

Raise an exception

Advanced Topics

Working with numbers

Basics of working with numbers

How floating-point numbers work

Using the math module

Format numbers

Using the format() method of a string

Using the locale module

Fixing rounding errors

Working with decimal numbers

Using the decimal module

Working with strings

Basics for working with strings

Unicode, indexes, slicing, duplicating, and multiline strings

Search a string

Looping through the characters in a string

Using basic string methods

Find and replace parts of a string

Split and join strings

Split a string into a list of strings

Joining strings

Working with dates and times

Getting started with dates and times

Create date, time, and datetime objects

Create datetime objects by parsing strings

Format dates and times

Working with spans of time

More about working with dates and times

Getting date and time parts

Compare date/time objects

Dictionaries

Getting started with dictionaries

Create a dictionary

Get, set, and add items

Delete items

Looping through keys and values

Convert between dictionaries and lists

More about dictionaries

Using dictionaries with complex objects as values

Object-oriented programming

Define and use classes

Intro to classes and objects

Create and use objects

Define a class

Code a constructor and attributes

Code methods

Working with object composition

How object composition works

Working with encapsulation

How object encapsulation works

How to hide attributes

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How to access hidden attributes with methods

How to access hidden attributes with properties

Inheritance

Working with inheritance

How inheritance works

Define a subclass

How polymorphism works

Check an object's type

Overriding object methods

Define a string representation for an object

Define an iterator for an object

More about Inheritance

Working with custom exceptions

Using inheritance

Database and GUI programming

Databases

Using Python to work with a database

Connect to a SQL database

Execute SELECT statements

Getting the rows in a result set

Execute INSERT, UPDATE, and DELETE statements

Test the database code

Handle database exceptions

Building GUI program

How to create a GUI that handles an event

How to display a root window

How to work with frames and buttons

How to handle a button click event

More skills for working with components

How to work with labels and text entry fields

How to lay out components in a grid

How to code a class that defines a frame

Faculty:

Fee:

Duration:

Demo time:

Batch time: