



CADVertex Solutions

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Revit API using Python

+ **Dynamo**



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Training Structure

Module 1: Python Programming.

Module 2: Revit API using Python.

Bonus Module: Dynamo

Features:

- ✓ LIVE coaching + recorded videos.
- ✓ Flexible timings.
- ✓ Weekday batches.
- ✓ Weekend batches.
- ✓ Modern Python programming included.
- ✓ Unlimited support after training: at no extra cost!
- ✓ Industry projects.

Highlights:

- ✓ Daily exercises.
- ✓ Best practices for programming in Revit.
- ✓ Resume Preparation.
- ✓ Interview Preparation.
- ✓ 100 Interview QA.
- ✓ Job referrals in top companies.

Bonus:

- ✓ Free study material.
- ✓ Free sample programs.
- ✓ Free Dynamo scripts.
- ✓ Free Python scripts.
- ✓ Free plugins.
- ✓ Free Python templates.



Online Training



Flexible Timings



Trainer: 25 yrs Exp.



Duration: 6 Wks



1 Hour Daily



Basic to Advanced



10 Industry Projs



Certificate



Support after Training



CuttingEdge Tech

Module 1: Python Programming

1. Installation and Basics

- Installing Python.
- Installing Python Editors – PyCharm, IDLE.
- Project Explorer, output and error windows.

2. Introduction to programming

- Setting up user interaction and collecting inputs.
- Running Python programs.
- Calculations and output display.
- Arithmetic operators.
- Using the Math library functions.
- Syntax, Comments, User Input, Print results, and control Program Flow.
- Variables: Float, Integer, String, and Boolean.
- String Variables: Find, Replace, Formatting and Slicing operations.
- Datatypes and Typecasting.

3. List, Tuples, and Loops

- Lists, Tuples, Dictionaries and Sets.
- List comprehensions.
- List Operations - Slicing and Data Extraction.
- String Operations - Slicing and Manipulations.
- Conditionals: If- Elif and If-Else, Nested If.
- Chaining Comparison Operators.
- Loops: For loop, nested For loops.

4. Functions and Modules

- Defining Functions and Arguments.
- Functions: Arguments, Return Statements and values.
- Functions: Optional Arguments.
- Functions: Multiple Return Values.
- Function Help and DocStrings.
- Modules and the Python standard library.
- Importing from modules.
- Creating Aliases.
- Life of variables, global and local variables.
- Errors - syntax, logical and exceptions.
- Exception handling.

5. Exception Handling

- Try Catch Except.
- Debugging Python Functions.
- Adding breakpoints and inspecting values.
- Determine source of error.
- Troubleshooting and fix errors in the code.

6. OS Functions

- Installing 3rd party packages using pip.
- Performing File, Folder, Path and operations.
- Manipulating file paths and extensions.
- Handling Files, File Filters.
- Text files - read, append and write with practical applications.
- Storing and retrieving data.
- Folders and Folder operations.

Module 2: Revit API using Python

7. Creating a Plugin

- Element Selection.
- Retrieve Elements and element ids.
- Retrieving properties of selected elements.
- Task Dialogs.
- Configuring Task Dialogs.
- Title, instructions, and contents.
- Command buttons and cancellation.
- Selection Filter.
- Filters basics.
- Get an element using filters.
- Filtered Element Collector.
- Built In Categories.
- Filtering elements.
- Querying the Filtered Element Collector.

8. Parameters Handling

- Working with Parameters.
- Reading and Writing Parameters.
- Getting parameters from Revit elements.
- Getting parameter by Name.
- Getting the value from a parameter.
- Setting a Parameter value.

9. Working with Transactions

- Start, commit and rollback transactions.
- Element Creation.
- Project: Creating walls.
- Single Wall Creation.
- Multiple Wall Creation.
- Element locations.
- Point locations.

Project: Adding View Tags.

Project: Adding Sheets in Revit.

Bonus Module: Dynamo

10. Dynamo

- What is Dynamo.
- What is Visual Programming.
- Getting Started with Dynamo.
- The Building Blocks of Dynamo.
- Automatic Manual Execution.

- Parts of a Node.
- Node Types: Create, Action, and Query.
- Searching, browsing and adding nodes.
- Quick Nodes.
- Node wiring and data flow.
- Unwiring nodes.

- Grouping and ungrouping.
- Duplicating and renaming nodes.
- Input, output and previews.
- Watching node output.

11. DesignScript in Dynamo

- Language details.
- Code blocks.
- Numerical inputs and Sliders.
- Code Vs. Nodes.
- Using Variables in nodes.
- Statements and values.
- Arithmetic and logical Operators.
- Built Functions.
- Custom Functions.
- List Range and indices.
- Graph view and background view.
- Zoom, Pan and rotate graphs.

- Mouse and keyboard shortcuts.
- Creating Custom Nodes.
- Custom Nodes – Computational.
- Custom Nodes – Geometrical.
- Store and Distribute Dynamo Scripts.
- Save and Share Dynamo Custom Nodes.

12. Programming Python Nodes in Dynamo

- Input and output wiring.
- Arguments, Arrays and Lists.
- Coupling Output of Python Script to nodes.
- Performing Arithmetic operations in Python nodes.
- Variables.
- Points and Coordinates.
- List and List Slicing.
- For Loop.
- For Loop with If.
- Break and continue.
- Shorthand for Loops.
- Functions and Arguments.

13. Using Dynamo with Revit

- Creating geometry - point, lines.
- Creating Revit geometry.
- Lists and Ranges.
- Visualizing parameter data.
- Create, Action, Query nodes.
- Filter list by element type.
- Automating repetitive tasks.
- How to create column grids.
- Working with data in Excel.
- Family types and instances.
- Creating custom nodes.
- Boolean Expressions in DesignScript.
- Generating Number Range using DesignScript.
- Generating Lists Using DesignScript.
- Generating multiple geometry Using DesignScript.
- Using the Dynamo player in Revit.

14. How to use ChatGPT for API Development

- Creating smart queries.
- Enhancing queries for best results.
- Refining queries for exploring more APIs.
- ChatGPT Code cleanup and adaptation.

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CADVertex Software

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