



CADVertex Solutions

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Inventor Automation

Language: **Python**

Training Structure

Module 1: Python Programming

Module 2: Tkinter GUI Programming

Module 3: Inventor Files and UI Automation

Module 4: Drawing Automation

Module 5: Part Automation

Module 6: Assembly Automation

Training Highlights



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

List of Projects

1. Geometric Calculator
2. Batch Processor
3. Paper Estimation
4. Create 3 Standard Dwg Views
5. Modify Dimensions in Bulk

6. Automatic Title Block Update
7. Estimate Cutting Cost
8. Estimate Machining Cost
9. Parametric Parts
10. Product Configurator

Module 1 : Python

- ❖ Installing Python
- ❖ Running Python programs
- ❖ Syntax, Comments, User Input, Print results, and control Program Flow
- ❖ Variables: Decimal, Integer, Strings, Boolean
- ❖ String Variables: Find, Replace, Formatting and Slicing
- ❖ Datatypes, Typecasting and Validations
- ❖ Arithmetic Operations
- ❖ Math Library and Functions
- ❖ Lists, Tuples, Dictionaries and Sets
- ❖ List Operations - Slicing and Data Extraction
- ❖ String Operations - Slicing and Manipulations
- ❖ Conditionals : If and Elif
- ❖ Chaining Comparison Operators
- ❖ Loops: For, While
- ❖ Functions: Arguments, Return Statements and values
- ❖ Functions: Optional Arguments
- ❖ Functions: Multiple Return Values
- ❖ Function Help and DocStrings
- ❖ Modules and the Python standard library
- ❖ Exceptions Handling: Try Catch Except
- ❖ Debugging
- ❖ Variables scope
- ❖ Lambda functions
- ❖ Installing 3rd party packages using pip
- ❖ List comprehensions

Bonus Module: Excel Automation

- ❖ Connect to Excel
- ❖ Access existing workbooks
- ❖ Create new workbooks
- ❖ Create new worksheets
- ❖ Access cells using names and indices
- ❖ Print a range of cells
- ❖ Write values to cells
- ❖ Write formulas to cells
- ❖ Evaluate formulas
- ❖ Access a range of cells and parse a range
- ❖ Read values from a range
- ❖ Save workbooks

Module 2 : Tkinter GUI

- ❖ Geometry and mainloop
- ❖ Project - Geometric calculator
- ❖ Setting dialog box properties, title, icon, size and location
- ❖ Adding widgets and adjusting their properties and placement
- ❖ Tkinter Datatypes - Double, Integer, Strings, and Boolean
- ❖ Data Type Conversion - tkinter variables and python variables
- ❖ Labels - static and dynamic
- ❖ Entry Textboxes - storing user input from textboxes into variables
- ❖ Setting default values and last used values in text boxes
- ❖ Button widget - formatting and calling functions
- ❖ Check boxes and radio buttons
- ❖ Listboxes - single selection and multiple selections
- ❖ Listboxes - adding items static and dynamic
- ❖ Listbox selection event binding
- ❖ Listbox display total count and selection count
- ❖ Listbox, remove selected item and remove all items
- ❖ Listbox - add items from textbox
- ❖ Scrollbar - adding scrollbar to a listbox
- ❖ Spinner widget - setting range and layout
- ❖ Scale widget - setting range and layout
- ❖ Images - displaying images in a dialog box
- ❖ File selection dialog
- ❖ Single and multiple files
- ❖ Adding file filters
- ❖ Folder selection dialog
- ❖ Selecting all files from folder dialog
- ❖ Adding file filters for folder dialog
- ❖ Opening files in associated application
- ❖ Message boxes - information, query and warning
- ❖ Configuring single line and multiline messages
- ❖ Button configurations and icon synchronizing
- ❖ Checking message box responses against button configurations
- ❖ Reading single and multiple files from a file dialog
- ❖ File and directory functions
- ❖ File and folder operations
- ❖ Text files - read, append and write with practical applications
- ❖ Manipulating file paths and extensions
- ❖ Option menu, add and remove items
- ❖ Handling multiple dialogs
- ❖ Adding pulldown menus, adding menu items
- ❖ Cascading menus and adding commands to menu items

Module 3 : Inventor UI and Document Automation

1. Getting Started

- ❖ Connect to Inventor
- ❖ Traversing the Inventor object model
- ❖ Getting information from the Inventor UI
- ❖ Read-write various properties of the Inventor UI

2. Inventor Documents:

- ❖ Inventor document type and environments
- ❖ Create new Inventor files - Part, Drawing and Assembly
- ❖ Open, Close, and Save Inventor files
- ❖ Close all documents in the Session
- ❖ Activate files in a session
- ❖ Loop through files in the session

4. File Handling

- ❖ Standard file dialogs to select Inventor files
- ❖ Setting Inventor file filters
- ❖ Single and multiple file selection

5. Batch Processing

- ❖ [Industry Project](#) - Create a Batch Processor for Handling Inventor documents
- ❖ Use the Folder selection dialog, gather all files of a specified type into a tuple
- ❖ Export the batch of documents to formats like DWG, STP, etc.

Module 4 : Inventor Drawing Automation

6. Managing Sheets In Drawings

- ❖ Creating drawing sheets
- ❖ Accessing, counting sheets and extracting sheet info
- ❖ Switching between sheets
- ❖ Deleting sheets
- ❖ [Industry Project](#) - Estimating Paper Requirement for Printing Drawings

7. Drawing Views

- ❖ Create drawing views
- ❖ Create the front view, projection views, and isometric views
- ❖ [Industry Project](#) - Creating Standard Views of a Model in Inventor

8. Dimensions in Drawings

- ❖ Learn to handle Dimensions In Inventor Drawings
- ❖ Dimension collection and dimension types
- ❖ Getting and setting properties of dimension like prefix and suffix
- ❖ [Industry Project](#) - Modifying Dimensions in Bulk

9. Handling Text In Drawings

- ❖ Access text objects in a drawing document
- ❖ [Industry Project](#) - Automatic Title Block Updater Program

10. 2D objects in Drawings

- ❖ Creating 2D objects in a drawing document
- ❖ Accessing 2D elements and its geometrical properties
- ❖ Selection Sets in Inventor
- ❖ [Industry Project](#) - Estimate Cutting Cost of a Milling Profile

Module 5 : Inventor Part Automation

11. Part Features

- ❖ Traversing the features of a Inventor model
- ❖ Determine type of features like hole, extrusions, draft, fillet, etc.
- ❖ Generic collections and feature collections
- ❖ Feature sub-type like various hole types
- ❖ [Industry Project](#) - Estimate Machining Cost for a Plate with Various Holes

12. Parametric Parts

- ❖ Create and control parametric part in Inventor
- ❖ Variable Table - dimensions and variables
- ❖ [Industry Project](#) - Modify parameters of a parametric shaft with a keyway

13. Advanced Part Features

- ❖ Creating variations of a part by manipulating features
- ❖ [Industry Project](#) - Build a Part Configurator from Scratch

14. Inventor Document Properties

- ❖ Read and write standard file properties
- ❖ Create, read and write custom properties
- ❖ [Industry Project](#) - Extract file properties and write to Excel

Module 6 : Inventor Assembly Automation

15. Inventor Products and Physical Properties

- ❖ Traverse through all components of a Inventor assembly
- ❖ [Industry Project](#) - Cost Estimation for a assembly

16. Product Configurator

- ❖ Product configurator are multifunctional systems that act as an interface between sales and product design that create BoM, drawings, cost, quotations, product images, reports & catalogs.
 - ❖ [Industry Project](#) - Create a Inventor Product Configurator.
 - ❖ Create and set up a parts library.
 - ❖ Automatically generate custom assemblies.
 - ❖ Build a UI to choose parts from the library.
 - ❖ Traverse a Inventor product & build the product configuration as specified by the user.
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Other eBooks and Training Programs from CADVertex:

- ❖ CATIA Automation: VB.Net or CSharp or Python
- ❖ SolidWorks Automation: VB.Net or CSharp or Python
- ❖ Solid Edge Automation: VB.Net or CSharp or Python
- ❖ Inventor Automation: VB.Net or CSharp or Python
- ❖ NX Open: VB.Net or CSharp with Win Forms
- ❖ NX Open: VB.Net or CSharp with Block UI Styler
- ❖ Knowledge Fusion
- ❖ Knowledge Fusion with Block UI Styler
- ❖ cMayoCAD: Learn to build a new CAD program from scratch using a Geometric Modeling Kernel and CSharp
- ❖ Machine Learning for Engineers with Python
- ❖ CATIA Automation with Python and Machine Learning
- ❖ NX Automation and Machine Learning with Python
- ❖ Solid Edge Automation with Python + Machine Learning
- ❖ SolidWorks Automation with Python + Machine Learning
- ❖ Inventor Automation with Python + Machine Learning
- ❖ Fast track course in Python with Machine Learning for VB.Net experts

❖ Fast track course in Python with Machine Learning for CSharp experts

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