



CADVertex Solutions

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SolidWorks Automation

Language: **Python**

Training Structure

Module 1: Python Programming

Module 2: Tkinter GUI Programming

Module 3: SolidWorks 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



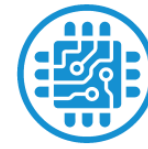
10 Industry Projs



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. Part 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 : SolidWorks UI and Document Automation

1. Getting Started

- ❖ Connect to SolidWorks
- ❖ Traversing the SolidWorks object model
- ❖ SolidWorks interface elements
- ❖ Show and Hide the SolidWorks main window
- ❖ Read-write various properties of the SolidWorks interface

2. SolidWorks Documents:

- ❖ SolidWorks document constants
- ❖ Create new SolidWorks files - Part, Drawing and Assembly
- ❖ Open, Close, Save and SaveAs SolidWorks files
- ❖ Close all documents in the Session
- ❖ Export SolidWorks documents to other formats
- ❖ Activate files in a session
- ❖ Loop through files in the session

4. File Handling

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

5. Batch Processing

- ❖ [Industry Project](#) - Create a Batch Processor for Handling SolidWorks 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 : SolidWorks Drawing Automation

6. Managing Sheets In Drawings

- ❖ Creating drawing sheets
- ❖ Accessing, counting sheets
- ❖ Extracting sheet info
- ❖ Switching between sheets
- ❖ Deleting sheets
- ❖ Exporting sheets to DXF, etc.
- ❖ [Industry Project](#) - Estimating Paper Requirement for Printing Drawings

7. Drawing Views

- ❖ Create drawing views
- ❖ [Industry Project](#) - Creating Standard Views of a Model in SolidWorks

8. Dimensions in Drawings

- ❖ Learn to handle Dimensions In SolidWorks Drawings
- ❖ Traversing dimensions and checking 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

- ❖ Selection manager in SolidWorks
- ❖ [Industry Project](#) - Estimate Cutting Cost of a Milling Profile

Module 5 : SolidWorks Part Automation

11. Part Features

- ❖ Traversing the features of a SolidWorks model
- ❖ Determine type of features like hole, extrusions, draft, fillet, etc.
- ❖ 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 SolidWorks
- ❖ Part parameters , model rebuilding and refitting
- ❖ [Industry Project](#) - modify features 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

Module 6 : SolidWorks Assembly Automation

14. SolidWorks Document Properties

- ❖ Read and write standard file properties
- ❖ Create, read and write custom properties

15. SolidWorks Assemblies

- ❖ Traverse through all components of a SolidWorks assembly

The trainings from CADVertex explain in detail how to use VB.Net or CSharp to master CAD Automation and create fully functional industrial grade custom applications for any CAD.

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

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