CATIA Automation
Language: **Python**

Training Structure

Module 1: Python Programming.
Module 2: CATIA Automation.

Training Highlights

Online Training   Flexible Timings   Trainer: 25 yrs Exp.   Duration: 6 Wks   1 Hour Daily
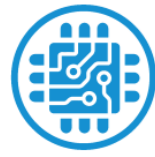
Basic to Advanced   5 Industry Projs   Certificate   Support after Training   CuttingEdge Tech

List of Projects (Automation)

1. Geometric Calculator
2. Create Drawing Views
3. Batch Processor
4. Title Blocks and Annotations
5. Parametric Parts
6. Build Assembly

Module 1: Python Programming

1. Python and IDE Installation

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

2. Python 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, and String.
- String Variables: Find, Replace, Formatting and Slicing operations.
- Datatypes and Typecasting.

3. List, Tuples, and Loops

- Lists, Tuples, Dictionaries and Sets.
- 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: Multiple Return Values.
- Function Help and DocStrings.
- Modules and the Python standard library.
- Importing from modules.
- Creating Aliases.

5. Exception Handling

- Errors - syntax, logical and exceptions.
- Exception handling.
- Try Catch Except.
- Debugging Python Functions.
- Adding breakpoints and inspecting values.
- Determine source of error.
- Troubleshooting and fixing 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.

7. Tkinter GUI Programming

- Dialogs and mainloop.
- Setting dialog box properties, title, icon, size and location.
- Adding widgets and adjusting their properties and placement.
- Tkinter Datatypes - Double, Integer, and Strings.
- 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.

8. Advanced GUI Programming

- Listboxes - single selection and multiple selections.
- Listboxes - adding items static and dynamic.
- Listbox display total count and selection count.
- Listbox - add items from textbox.
- Listbox - remove items.

- Spinner widget - setting range and layout.
- Scale widget - setting range and layout.
- Images - displaying images in a dialog box.

- Message boxes - information, query and warning.
- Configuring single line and multiline messages.
- Button configurations and icons.
- Checking message box responses against button configurations.

- 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.

- Handling multiple dialogs.

Module 2: CAD Automation

9. Getting Started

- ❖ Connect to CAD
- ❖ Getting information from the UI
- ❖ Read-write various properties of the UI

10. Documents Automation

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

11. File Handling

- ❖ Standard file dialogs to select files
- ❖ Setting file filters
- ❖ Industry Project – Batch Processor

12. Managing Sheets in Drawings

- ❖ Creating drawing sheets
- ❖ Accessing sheets in a drawing
- ❖ Counting and extracting sheet info
- ❖ Switching between sheets

13. Drawing Views

- ❖ Create drawing views
- ❖ Industry Project - Creating standard views of 3D models

14. Handling Text in Drawings

- ❖ Access text objects in a drawing document
- ❖ Industry Project - Automatic Title Block Updater Program

15. 2D objects in Drawings

- ❖ Creating 2D objects in a drawing document

16. Parametric Parts

- ❖ Control parametric part
- ❖ Expression and formulas - dimensions and variables
- ❖ Industry Project - Modify features of a parametric shaft with a keyway

17. Assembly Generation

- ❖ Inserting parts into an assembly
- ❖ Positioning components in an assembly

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