

Методи автоматизації створення 3D-моделей

Програмний інтерфейс
Solidworks



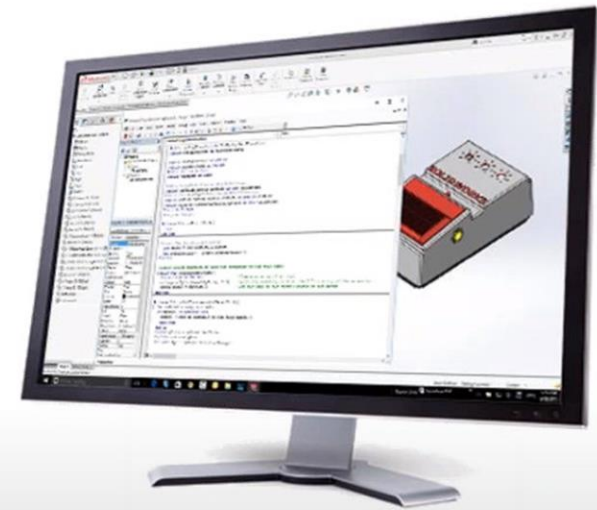
API Application Development

Solidworks API. Вступ

Introduction to API

SOLIDWORKS Application Programming Interface (API) is a set of rules or code, communication protocols and tools for building application inside the software.

It is used to automate redundant and lengthy design tasks using SOLIDWORKS software and to create completed engineering applications that can run both inside and outside of the SOLIDWORKS.



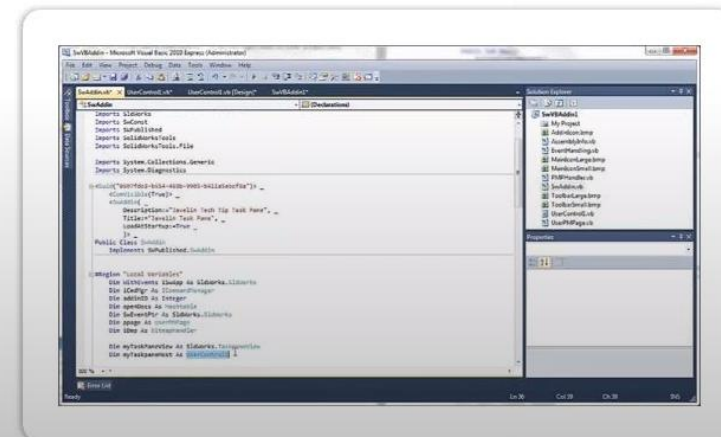
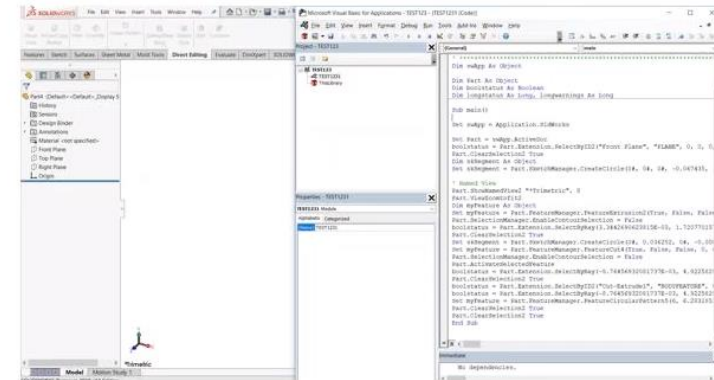
Типи програм

PROCEDURE ACCESSING API INSIDE SOLIDWORKS

API can be accessed in two ways

1. SOLIDWORKS Macros (.SWP file)

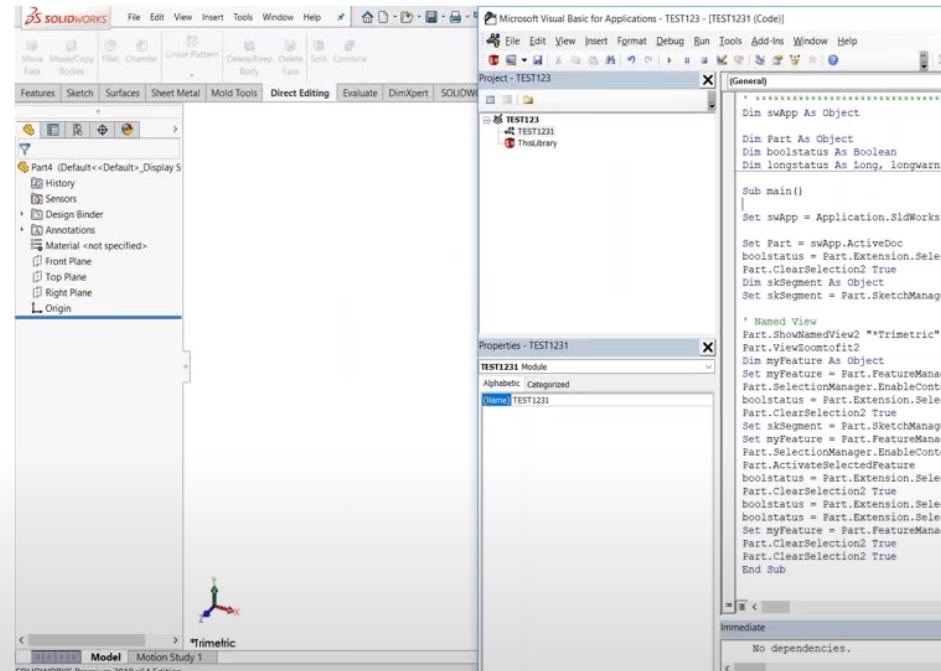
2. Standalone Application (.dll/.exe)



Макроси Solidworks

RECORD AND PLAYBACK MACROS USING SOLIDWORKS INTERFACE

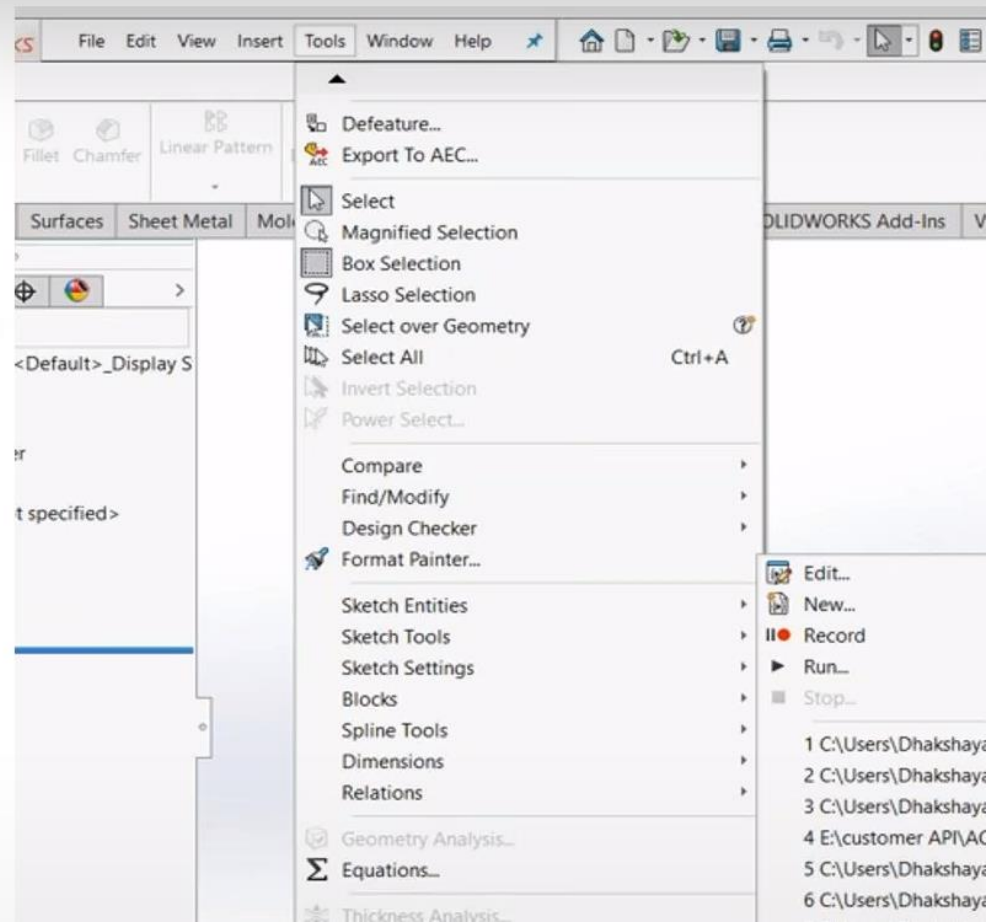
- **Microsoft VBA** is a toolset based on Microsoft Visual Basic for Applications (VBA) and is embedded in the SOLIDWORKS software.
- Microsoft VBA lets you record, run, and edit macros in the SOLIDWORKS software.
- Recorded macros are saved as **.swp (SOLIDWORKS Program)** files.



Робота з макросами в Solidworks

MACRO TOOLBAR

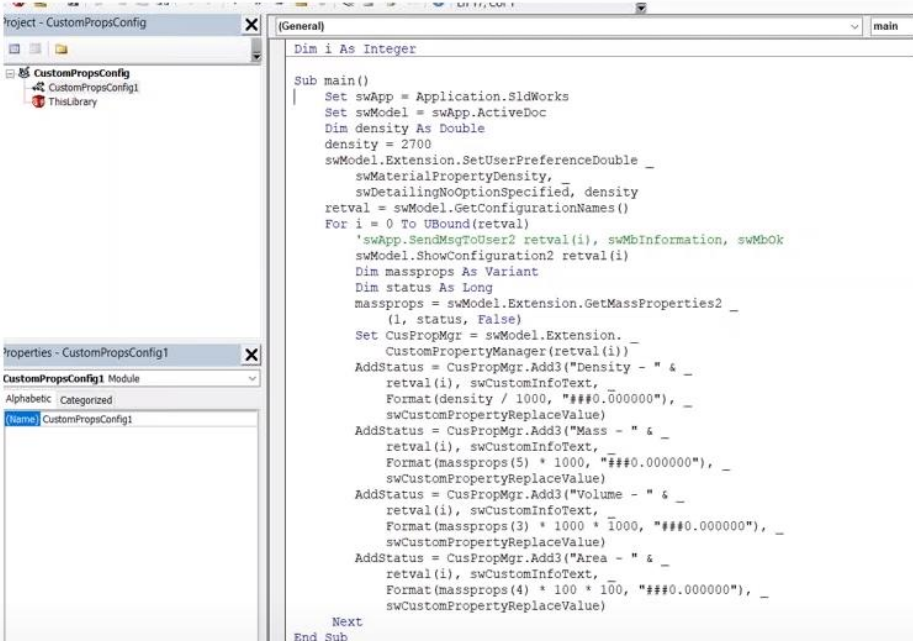
-  RUN
-  PAUSE
-  RECORD
-  NEW
-  EDIT



Додавання логіки в макроси

ADDING LOGIC TO MACRO

A recorded macro can be edited and required sequence of operations can be streamlined by adding the solidworks API object using hierarchy and logic to attain it

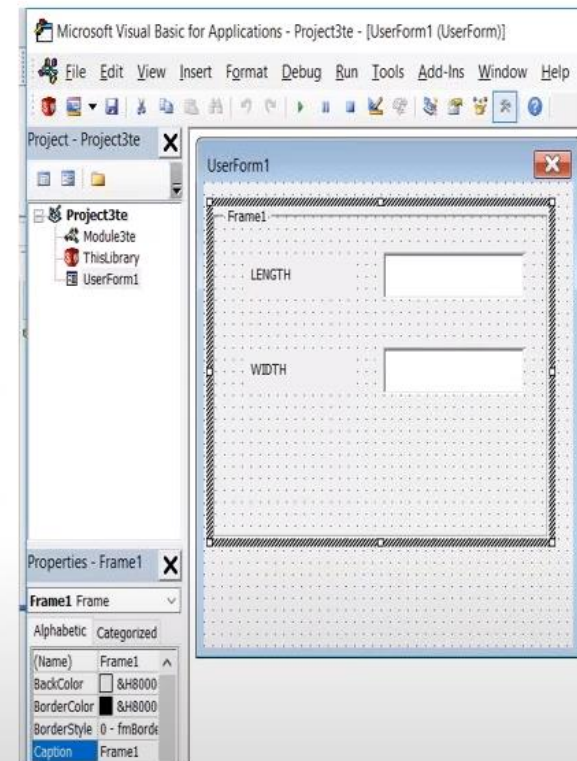
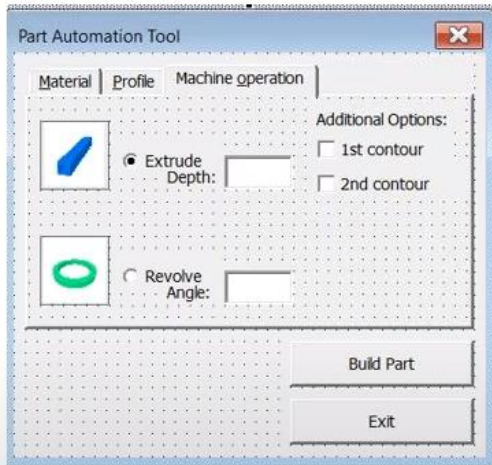


```
Dim i As Integer

Sub main()
    Set swApp = Application.SldWorks
    Set swModel = swApp.ActiveDoc
    Dim density As Double
    density = 2700
    swModel.Extension.SetUserPreferenceDouble _
        swMaterialPropertyDensity, _
        swDetailingNoOptionSpecified, density
    retval = swModel.GetConfigurationNames()
    For i = 0 To UBound(retval)
        'swApp.SendMsgToUser2 retval(i), swMbInformation, swMbOk
        swModel.ShowConfiguration2 retval(i)
        Dim massprops As Variant
        Dim status As Long
        massprops = swModel.Extension.GetMassProperties2 _
            (i, status, False)
        Set CusPropMgr = swModel.Extension. _
            CustomPropertyManager(retval(i))
        AddStatus = CusPropMgr.Add3("Density - " & _
            retval(i), swCustomInfoText, _
            Format(density / 1000, "###0.000000"), _
            swCustomPropertyReplaceValue)
        AddStatus = CusPropMgr.Add3("Mass - " & _
            retval(i), swCustomInfoText, _
            Format(massprops(5) * 1000, "###0.000000"), _
            swCustomPropertyReplaceValue)
        AddStatus = CusPropMgr.Add3("Volume - " & _
            retval(i), swCustomInfoText, _
            Format(massprops(3) * 1000 * 1000, "###0.000000"), _
            swCustomPropertyReplaceValue)
        AddStatus = CusPropMgr.Add3("Area - " & _
            retval(i), swCustomInfoText, _
            Format(massprops(4) * 100 * 100, "###0.000000"), _
            swCustomPropertyReplaceValue)
    Next
End Sub
```

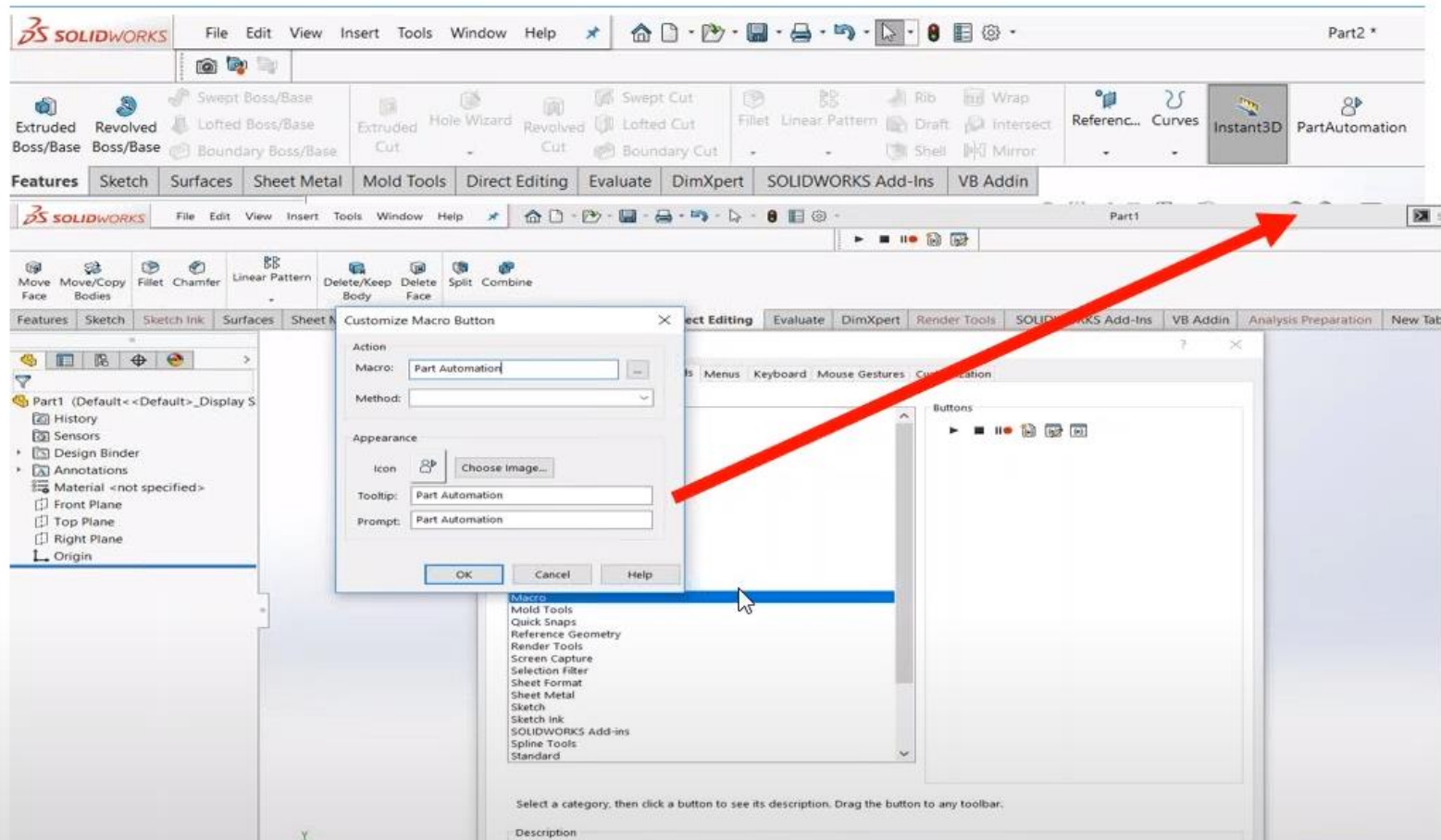
Додавання графічного інтерфейсу в макроси

GRAPHICAL USER INTERFACE



Створення кнопки макросу

CREATING MACRO BUTTON

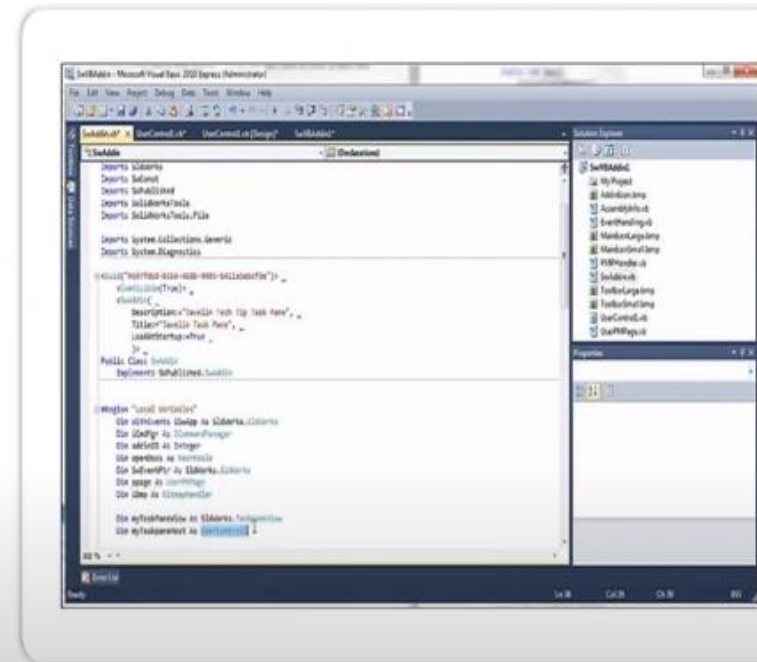


АВТОНОМНІ ЗАСТОСУНКИ

STANDALONE APPLICATION TO RUN OUTSIDE OF THE SOLIDWORKS

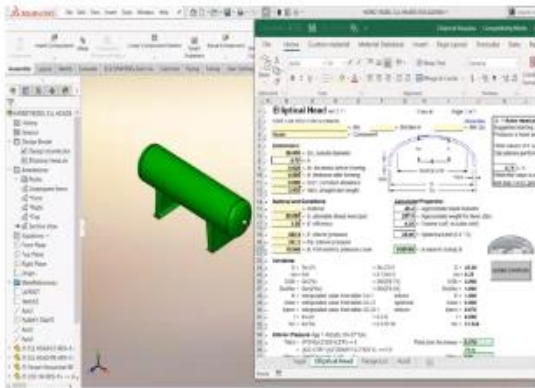
You can use any programming language that supports COM to create SOLIDWORKS standalone API (.exe files) and add-in (.dll files) applications. The programming languages most commonly used are:

- Visual Basic .NET (VB.NET)
 - Visual C++/CLI
 - Visual C# .NET
 - Visual C++ 6.0
- Programming will be made outside environment.
 - It initiate SOLIDWORKS.

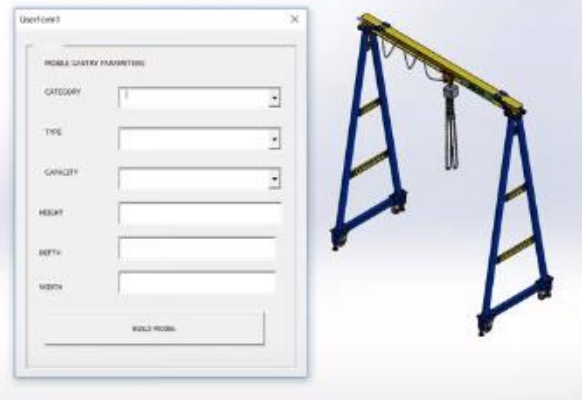


Типи автономних застосунків

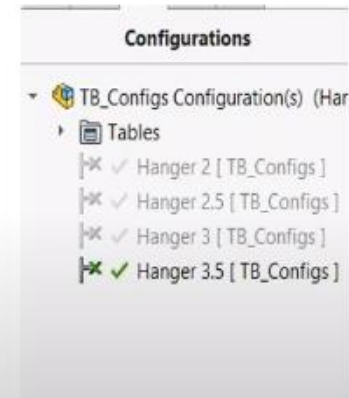
Excel Integration inside SOLIDWORKS using API



Graphical User Interface(GUI)



Assembly and Part Configuration Segregator





Переваги використання API

ADVANTAGES OF USING API

- Automate Repeated tasks
- Increased productivity
- Reduce tasking at user level
- Minimize manual errors
- Reduce Time to Market
 - Concentrate on new and special design
- Addin Will let you create your application that can access the SOLIDWORKS and SOLIDWORKS Data



Дякую за увагу !