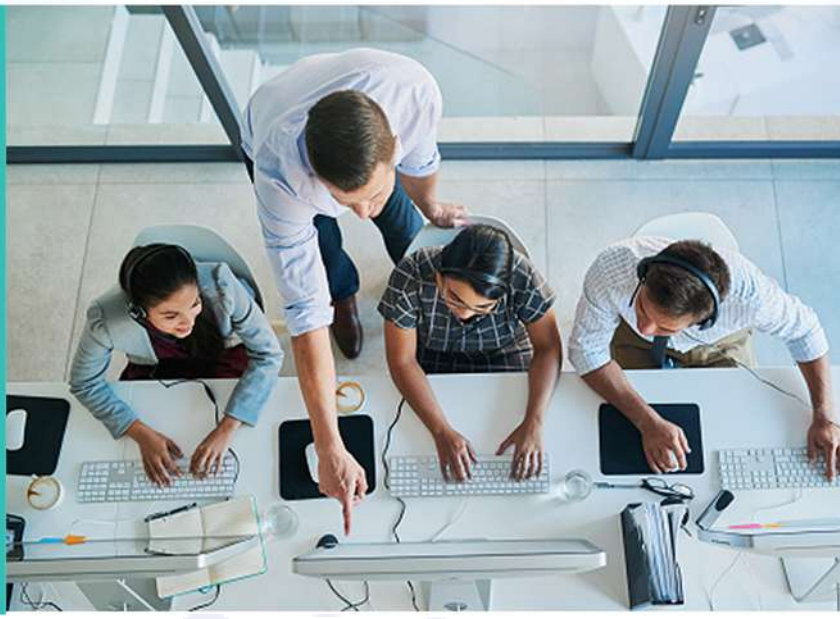
Andhra Pradesh State Skill Development Corporation

Skill AP
APSSDC



SciLab

Graphical User Interface

Graphical User Interface(GUI) in Scilab

Graphical User Interface

A GUI (graphical user interface) is a system of interactive visual components for computer software. A GUI displays objects that convey information, and represent actions that can be taken by the user. The objects change color, size, or visibility when the user interacts with them.

GUI objects include icons, cursors, and buttons. These graphical elements are sometimes enhanced with sounds or visual effects like transparency and drop shadows.

A GUI is considered to be more user-friendly than a text-based command-line interface, such as MS-DOS, or the shell of Unix-like operating systems.

Graphical User Interface in Scilab

A graphical user interface (GUI) consists of common gadgets such as push buttons, sliders, editable input fields, checkboxes, etc.

We have to create and arrange them in a graphical window, and then use their functions to a particular set of requirements.

To implement GUI in Scilab users have to install GUIBuilder.

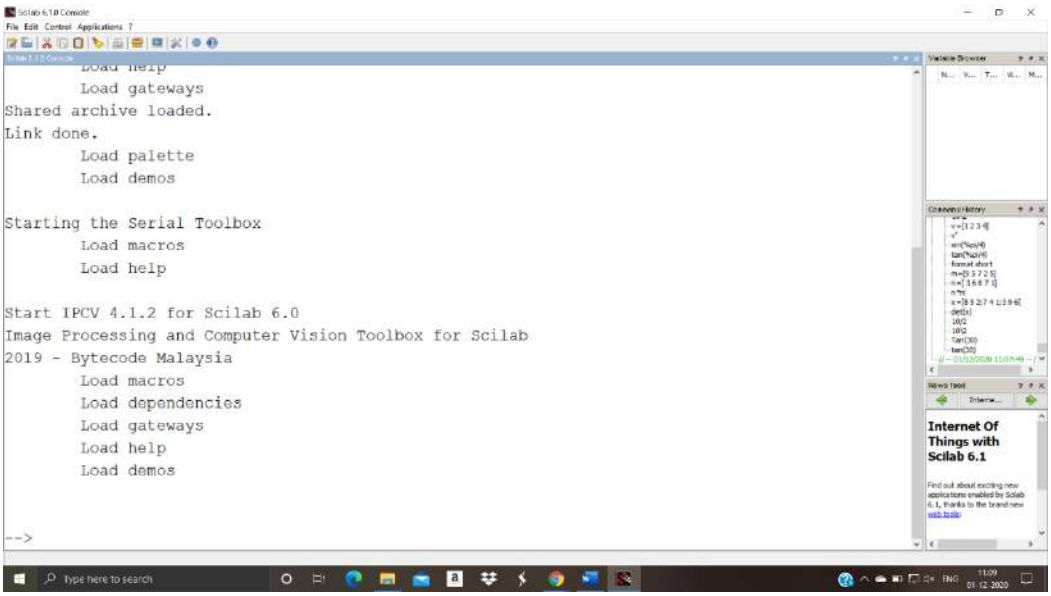


Fig.console window

GUI BUILDER installation:

Scilab having a GUI builder toolbox free of cost.

GUI Builder can be download from the ATOMS module manager.

First, open the Scilab console window and goto the applications menu.

Select Module manager-ATOMS

After initializing ATOMS, a new window will open.

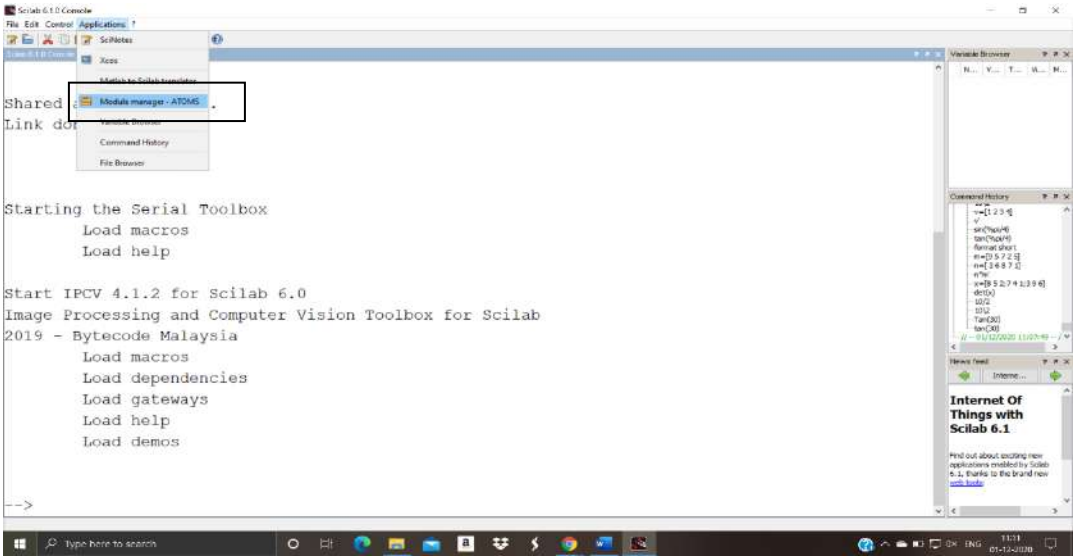


Fig.Select module manager

This window consists of many toolboxes which are supported for Scilab

and users can do a variety of applications.

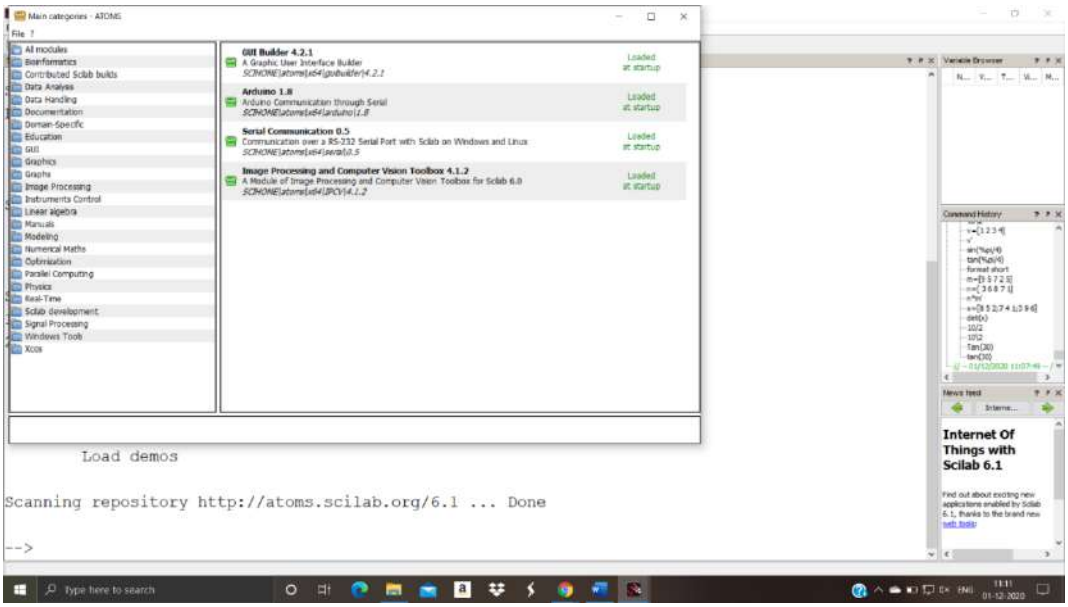


Fig.ATOMS Window

On the left side of this window, we see a number of applications that are toolboxes to use for various scientific and mathematical operations. for instance Xcos toolbox for simulation.

Select GUI file and select GUIBuilder

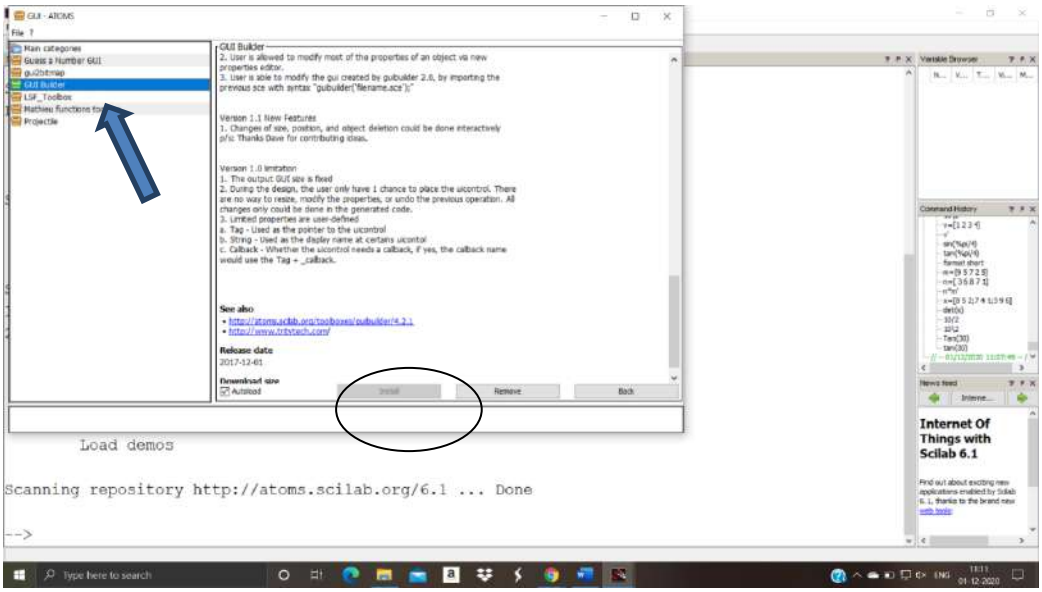


Fig. selecting GUIBuilder

At bottom of the window, we can see three options install, remove, and back.

Click on the install option, it takes few seconds to install GUI builder.

After completing installation click on back.

ATOMS window will close. and close Scilab software to launch the GUI builder in Scilab.

Reopen the Scilab software you can observe GUIbuilder has launched in the console window.

So, now we can start working with GUI builder

Type “guibuilder” in the console window and press enter

This will open two windows which are the GUI builder pallete window and the graphic window.

Pallete browser consists of a variety of icons such as pushbuttons, radio buttons,

Edit, slider, and many more.

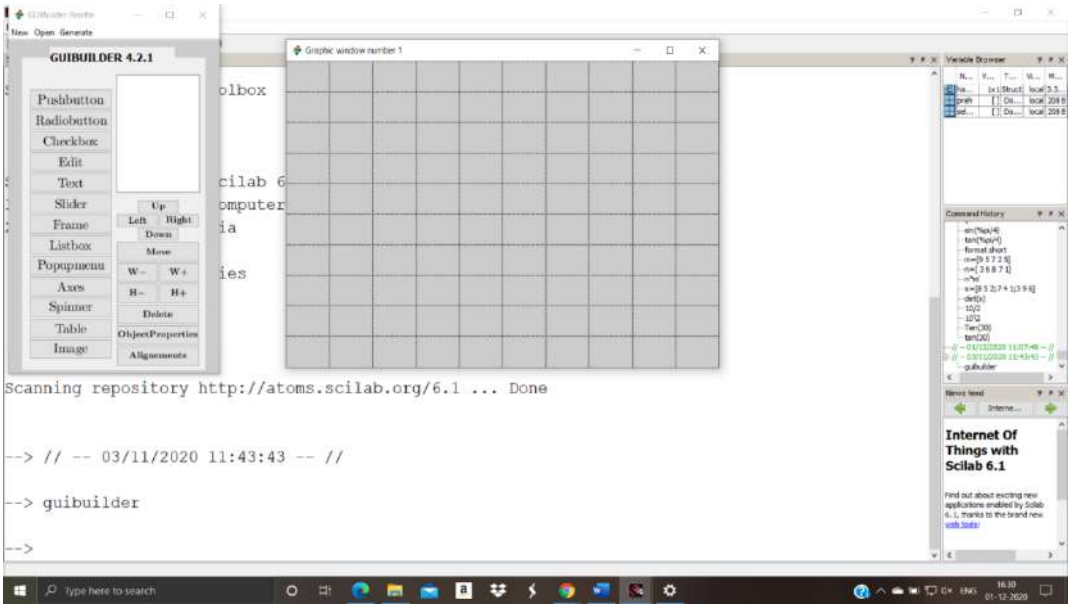


Fig.GUIBUILDER

Another window is a graphic window which has grids. In the graphic window, we can design our applications, for instance, a calculator.

Using these palletes users can implement many applications.

Let's start with a small example. this will explain how to design our models with GUI builder.

Let's start with a universal example to print "Hello World".I would like to print the statement that "Hello World" and "Welcome to Scilab".

This tutorial will help us step by step procedure to implement the above example.

In this example, we need two pushbuttons which are available in pallete browser.

Switch to pallete browser and select pushbutton

A pop-up window appears asking for tag and string name.

Enter the data one by one

I am giving tag name as hello and string as hello world.

Click on ok.

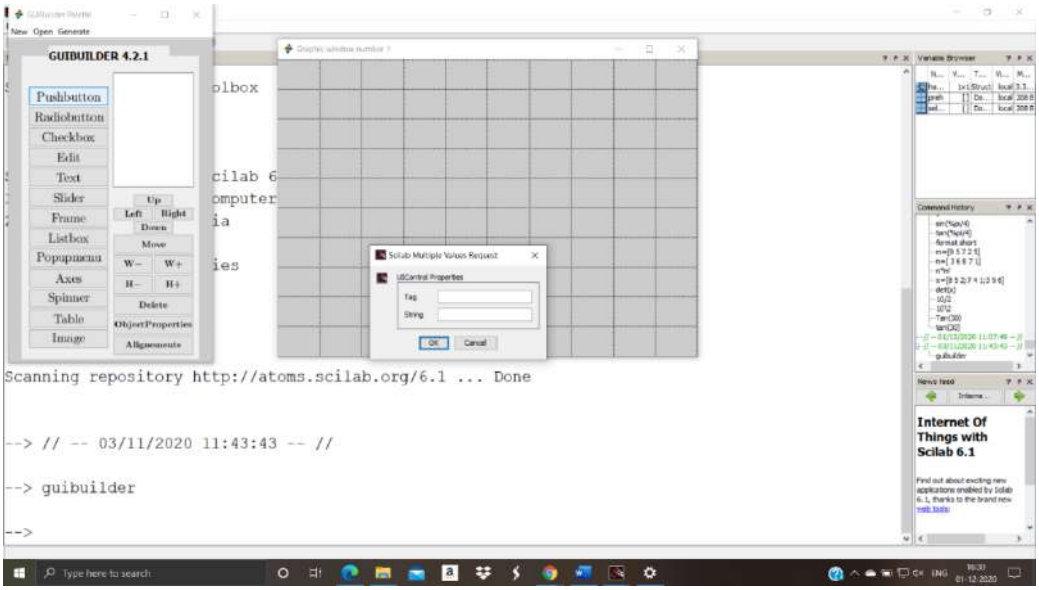


Fig.entering pushbutton details

Switch to the graphic window. Now, place your cursor on the graphic window select a point(left click on your mouse) on-grid, drag some area and again left click on your mouse. this will create a uicontrol on your graphic window.

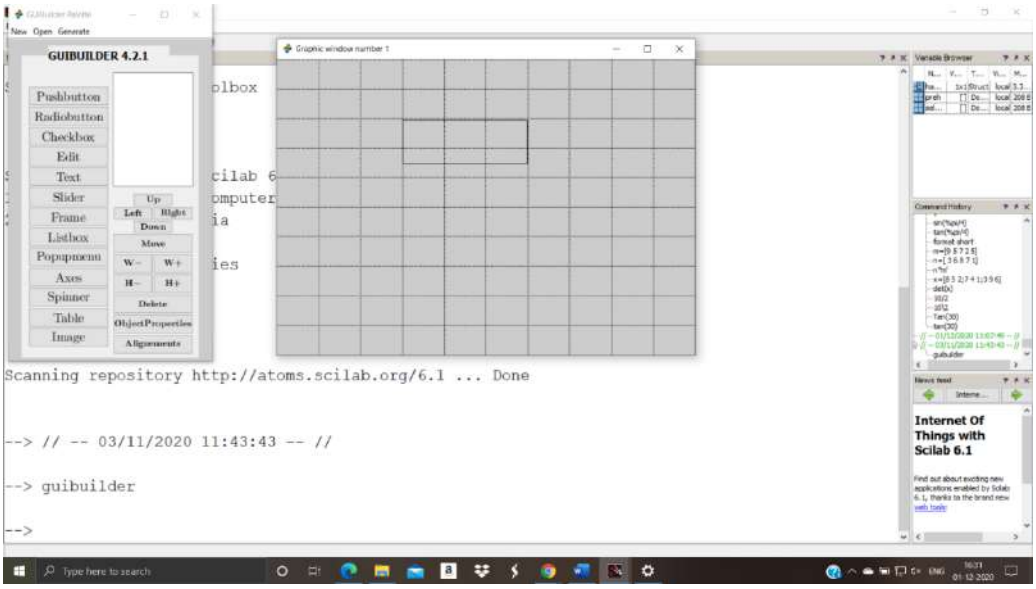


Fig.creating uicontrol

This will create a pushbutton with the name of hello world.

Similarly, take another pushbutton

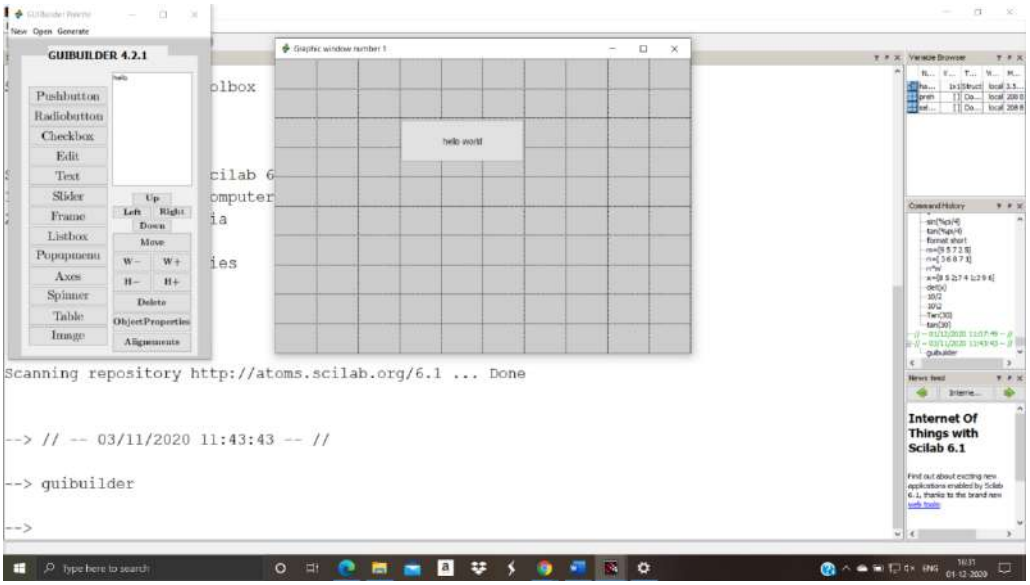


Fig.pushbutton on graphic window

A pop-up window appears

Enter tag and string names as welcome and welcome to Scilab respectively.

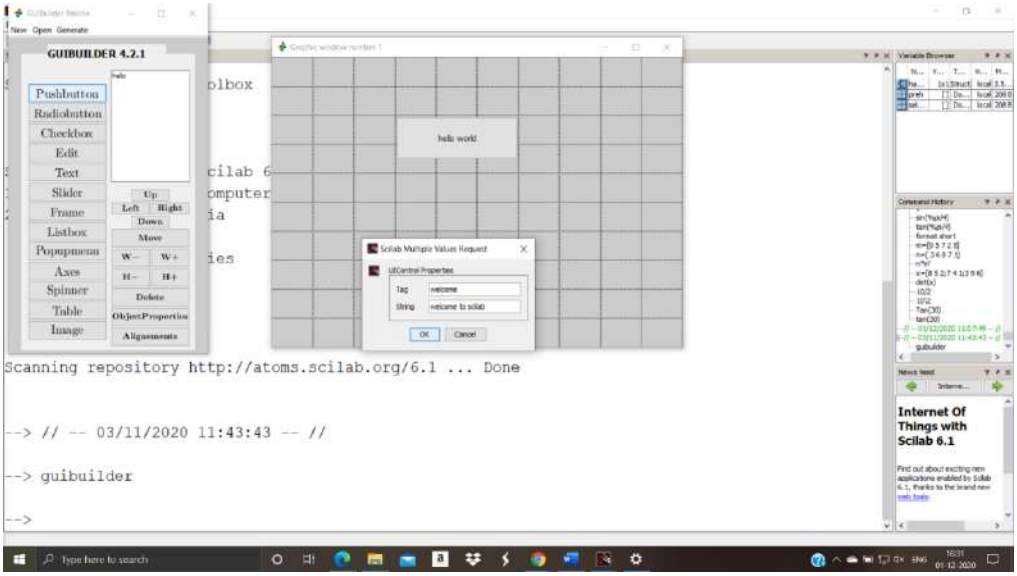


Fig.creating welcome button

Place your cursor on the graphic window and the same procedure to create uicontrol on the graphic window.

This will create a welcome button

Select both pushbuttons and align them properly.

To align the buttons click on alignment in pallete browser. so that we will make our design nice.

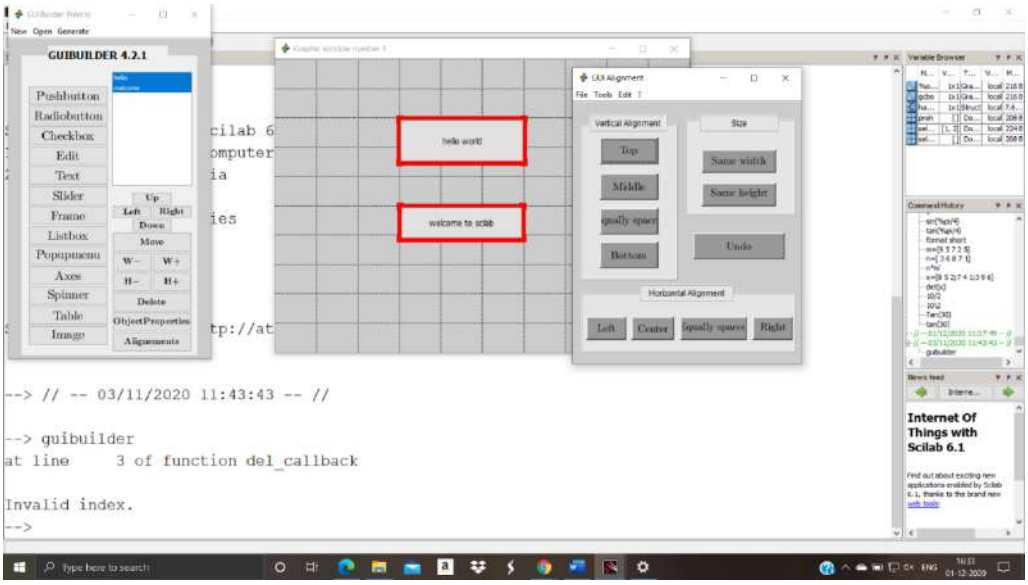


Fig.alignment

Set them properly as same width, same height, equally spaced, and center position.

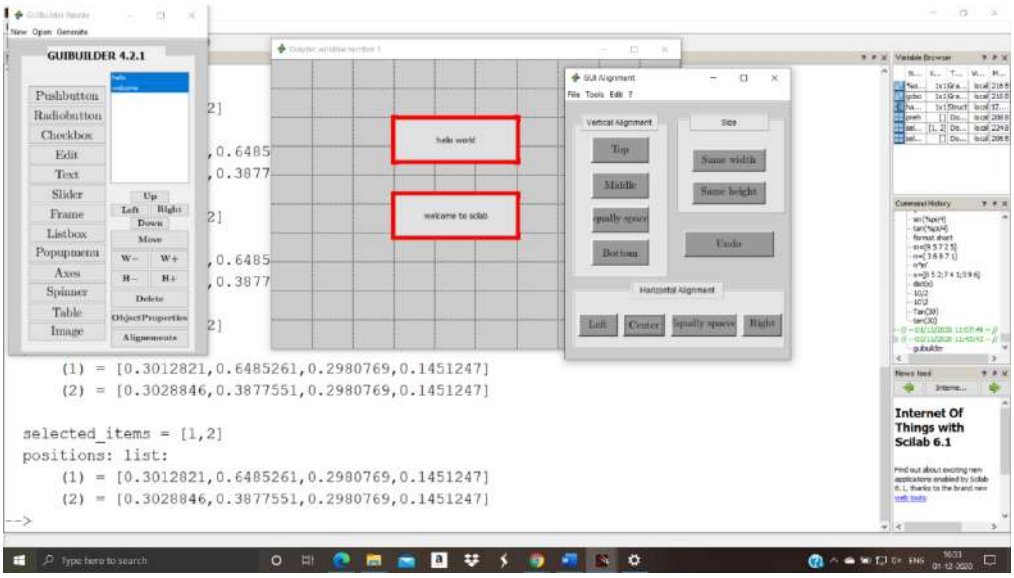


Fig.set uicontrols properly

Well, after doing this we need to check object properties

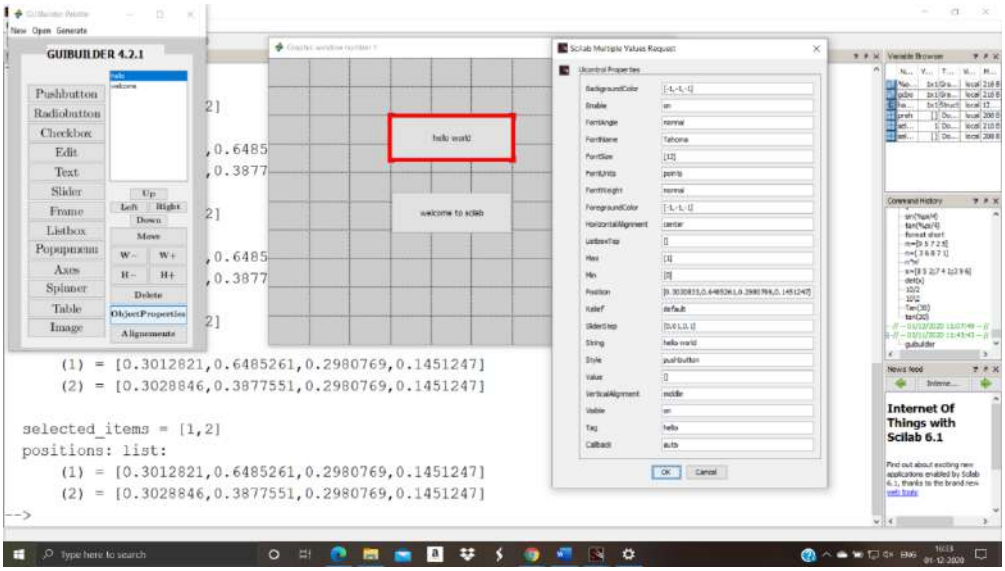


Fig.object properties of hello button

So, here we can edit uicontrol data that tag name, string name, and callback.

Notice that callback should be set as auto.

Click on ok.

Similarly, do the same for the welcome button and set the callback as auto. if it is already given by default you simply move on next step.

Well, let's move on to generate the code for our design.

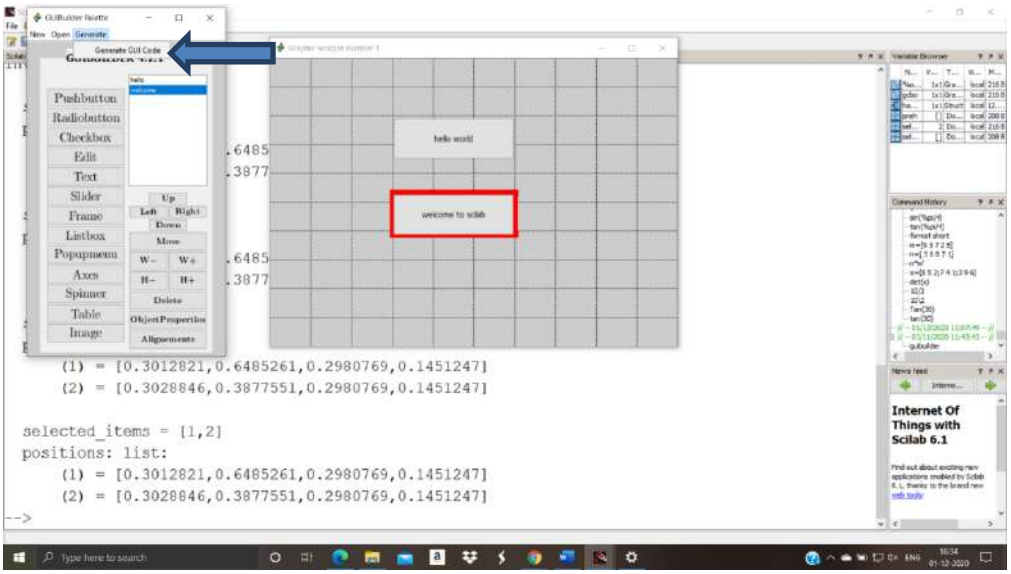


Fig.generate GUI code

Switch to pallete browser. Click on the generate menu and hit generate GUI code.

It asks us to save work. save the file in the respective folder.

Click on save.

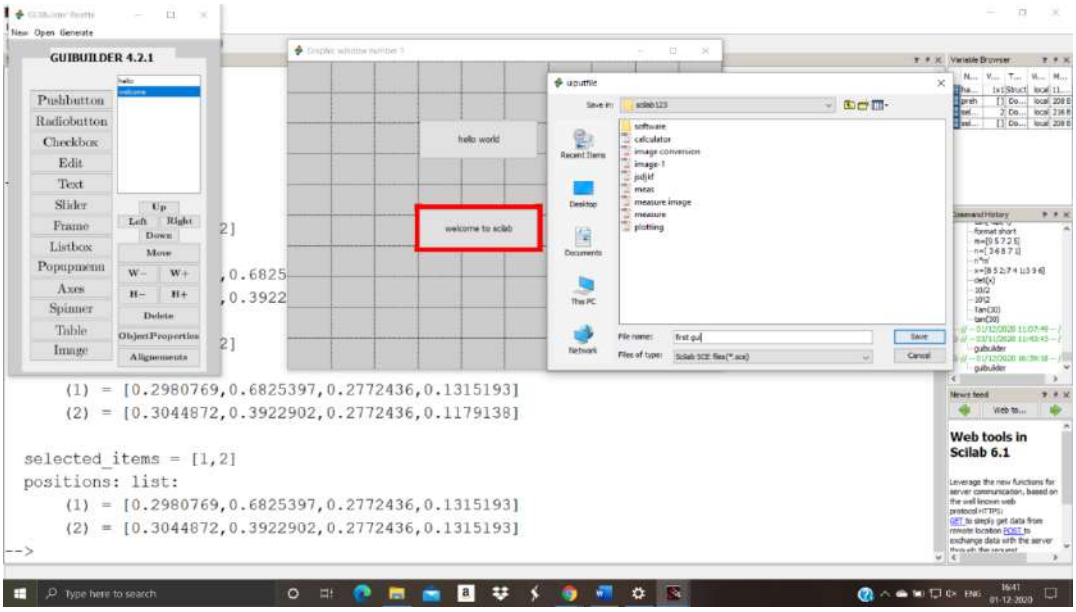


Fig.saving the work

After saving the file a pop-up window displays. click on ok.

This will generate GUI code.it opens scinotes.

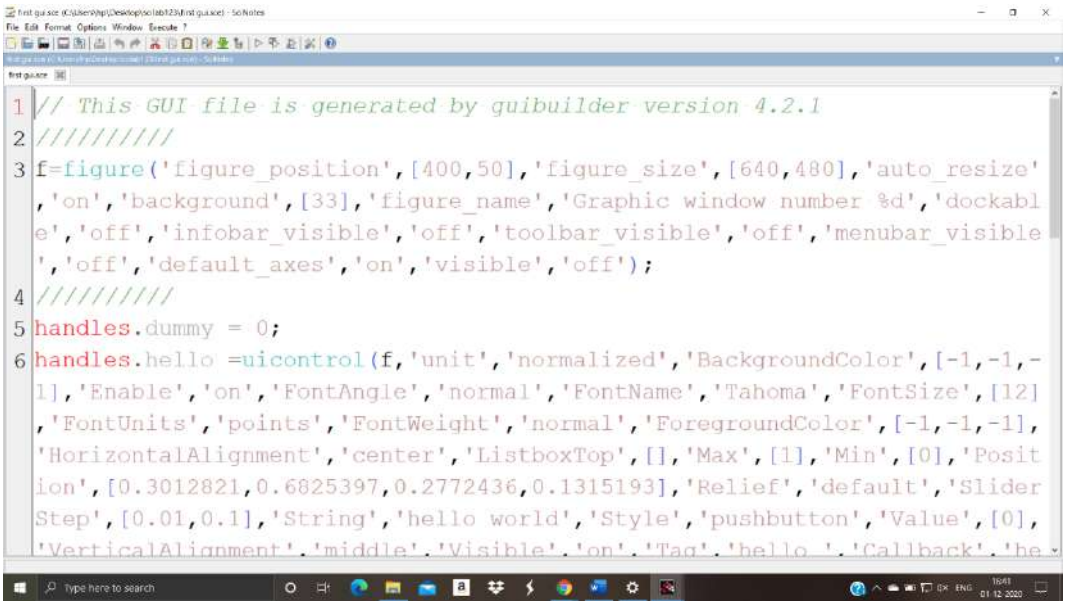


Fig.GUI generated code

Click on the execute button it displays the preview of our GUI design. but it wouldn't work because we wouldn't write any callback for them.

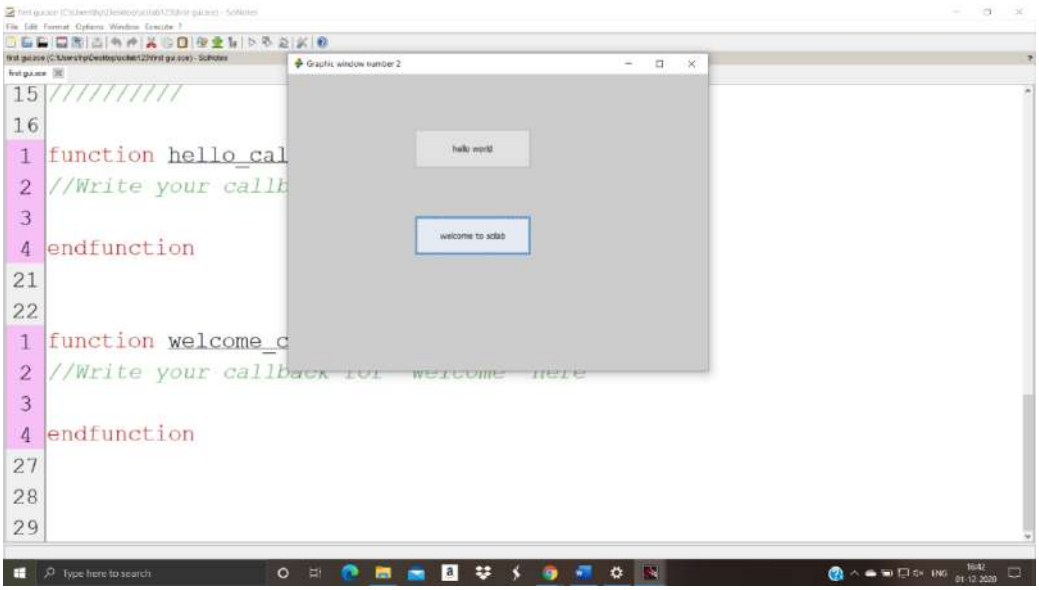


Fig.Scinotes

Let's start to write callback to print hello world and welcome to Scilab

Write callback to print hello world

Disp("Hello World")

Similarly, write a callback to welcome to Scilab

Disp("Welcome to Scilab")

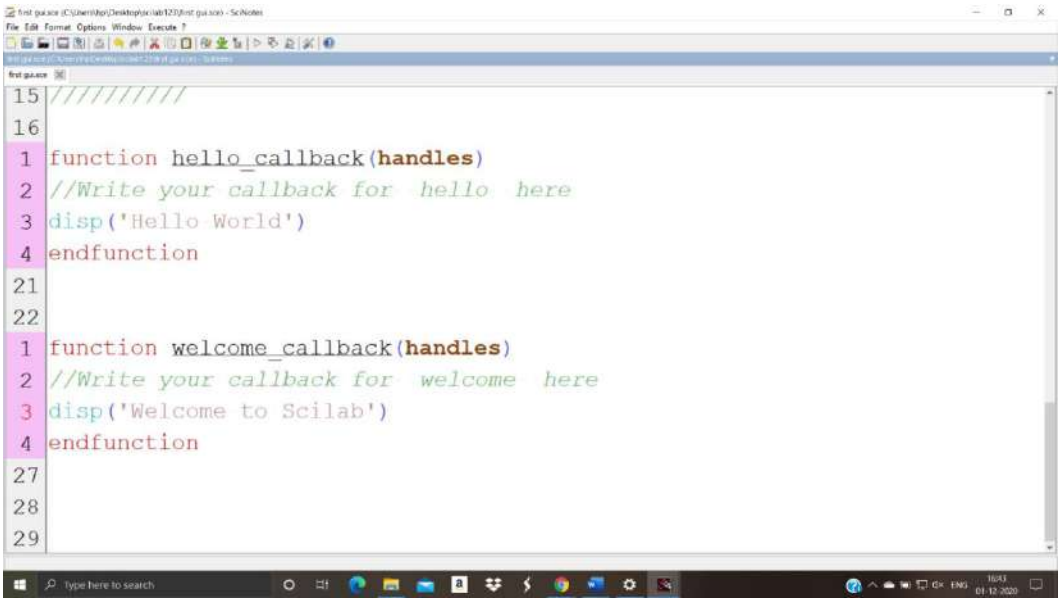


Fig.Writing callback to respective functions

Now, everything is set.

Click on the execute button to run the program.

Our GUI design will open. switch to console window parallel with GUI window.

Now hit the hello world button.it displays “Hello World” on the console window.

Similarly, hit the Welcome to Scilab button.it displays “Welcome to Scilab” on the console window.

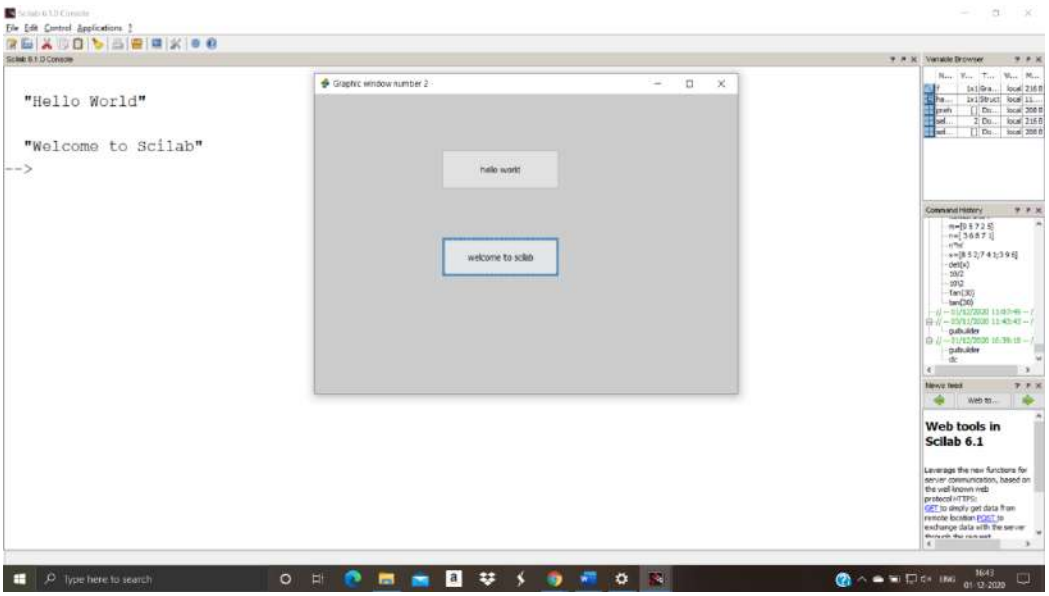


Fig.GUI prints sentence on console window

Like this we can implement variety of designs using different GUI palletes.
For more information regarding building GUI exercises you can visit Scilab official site https://www.scilab.org/