We are Pythonistas

Python and FOSS in Education for Gen. Z

Gajendra Deshpande

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The Generation Z, BYOD and Education

- Gen Z : born between 1995 and 2010
- More Tech Savvy
- Learn best by doing/creating
- Teachers need to be equipped with the technology
- BYOD: Bring Your Own Device

People born from 1995 to 2010—are true digital natives: from earliest youth, they have been exposed to the Internet, to social networks, and to mobile systems.

With BYOD you are creating a 1:1 classroom. Students bring and use their choice of technological devices in the classroom.

BYOD: Advantages and Disadvantages

CISCO DevNet - Securing and increasing productivity of BYOD in class rooms at schools (AICTE India)

The benefits of BYOD

- Your students know the device
- Technology has many possibilities
- Cutting-edge devices
- Cost Effective
- Learning outside the school hours
- Respect for the device
- Organized students

Disadvantages of BYOD

- Students without devices
- Different devices
- Distraction
- Not-responsible student

Austria, USA, Estonia, Australia, Finland, Norway, Portugal, Switzerland, UK

QPython – Python on Android

QPython is a script engine which runs Python programs on android devices. It also can help developers develop android applications.

Develop easily: QPython includes a complete development kit which help you to develop programs with mobile.

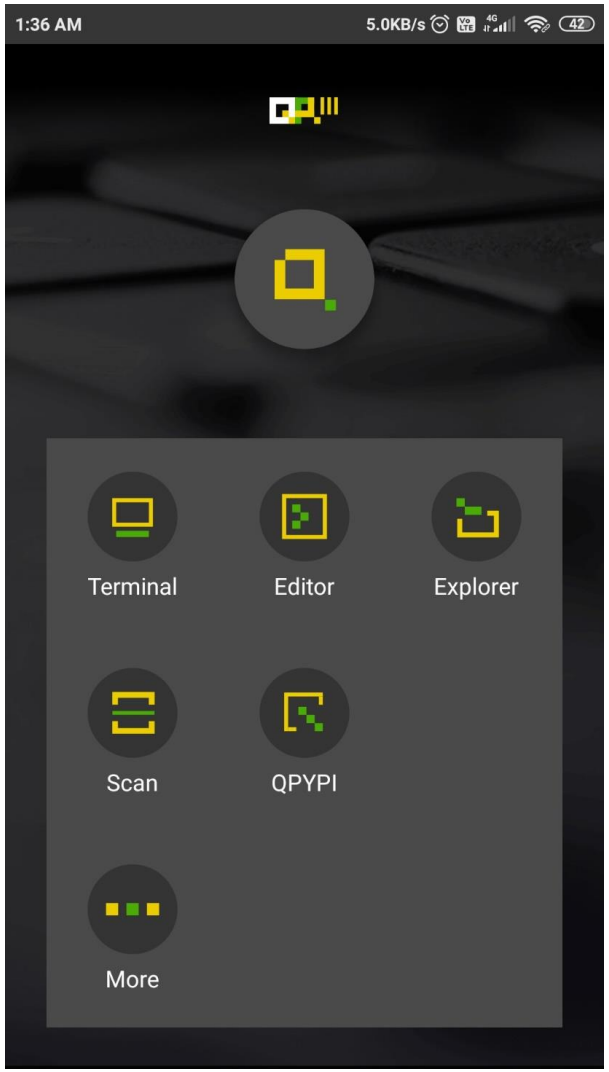
Powerful: QPython is powerful, you can extend it as you want.

Great Support: Commercial support can support your development with QPython API or Embed QPython SDK, it can save your time.

QPython

Available in two versions: qpython and qpython3

Website: https://www.qpython.com/



QPython

Can Execute python programs on Terminal and Notebook on Android phones

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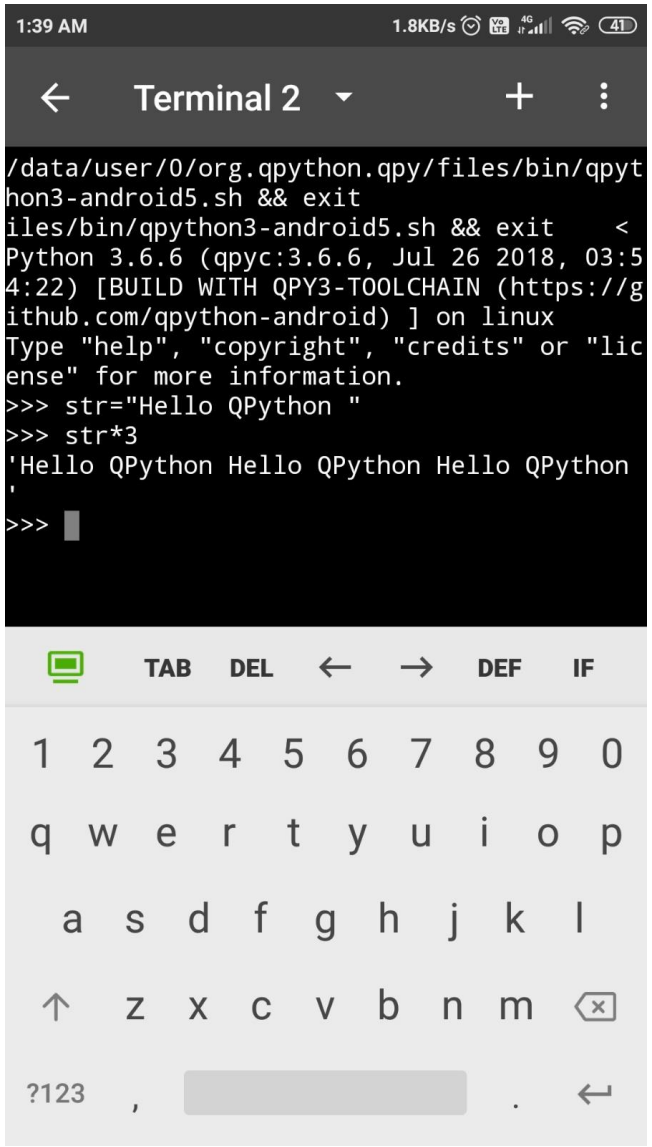

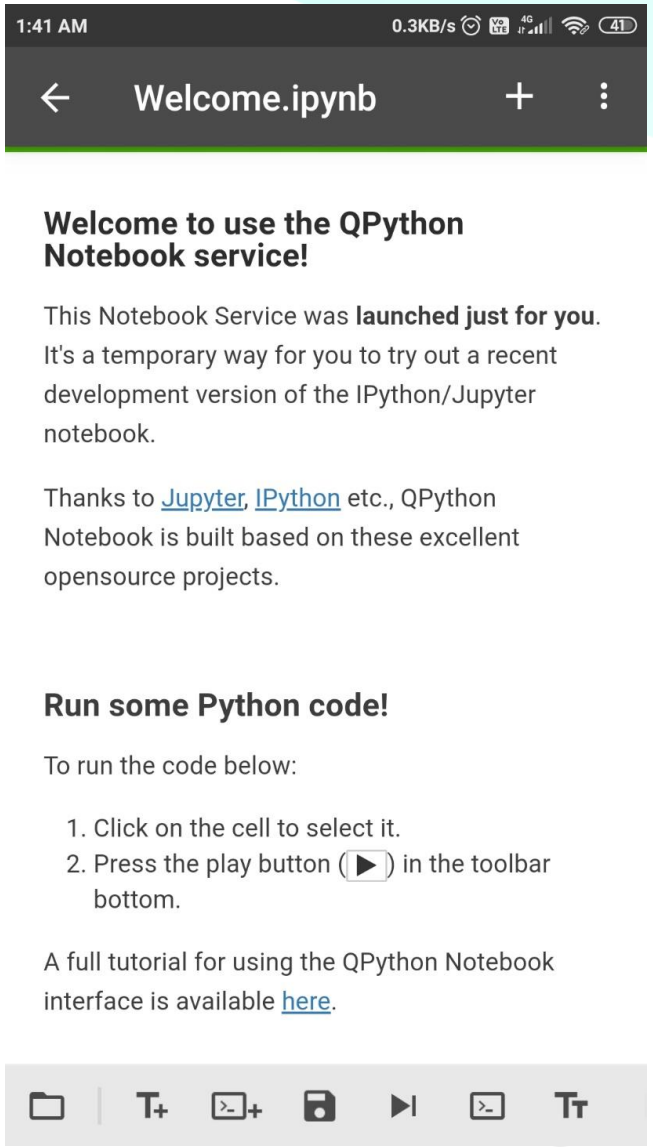

Google Blockly

Blockly is a library for building visual programming editors

Blockly is a library that adds a visual code editor to web and mobile apps. The Blockly editor uses interlocking, graphical blocks to represent code concepts like variables, logical expressions, loops, and more. It allows users to apply programming principles without having to worry about syntax or the intimidation of a blinking cursor on the command line.

From a user's perspective, Blockly is an intuitive, visual way to build code. From a developer's perspective, Blockly is a ready-made UI for creating a visual language that emits syntactically correct user-generated code.

Blockly can export blocks to many programming languages, including these popular options: JavaScript, **Python**, PHP, Lua, and Dart

Google Blockly

Blockly is one of a growing number of visual programming environments. Deciding which one to use in your app is an important step, so here are a few of Blockly's biggest strengths to help you make the decision:

- **Exportable code.** Users can extract their block-based programs to common programming languages and smoothly transition to text-based programming.
- **Open source.** Everything about Blockly is open: you can fork it, hack it, and use it in your own sites and Android apps.
- **Extensible.** Tweak Blockly to fit your needs by adding custom blocks for your API or removing unneeded blocks and functionality.
- **Highly capable**. Blockly is not a toy. You can implement complex programming tasks like calculating standard deviation in a single block.
- **International.** Blockly has been translated to 40+ languages, including right-to-left versions for Arabic and Hebrew.

Blockly

Blockly with Python code example

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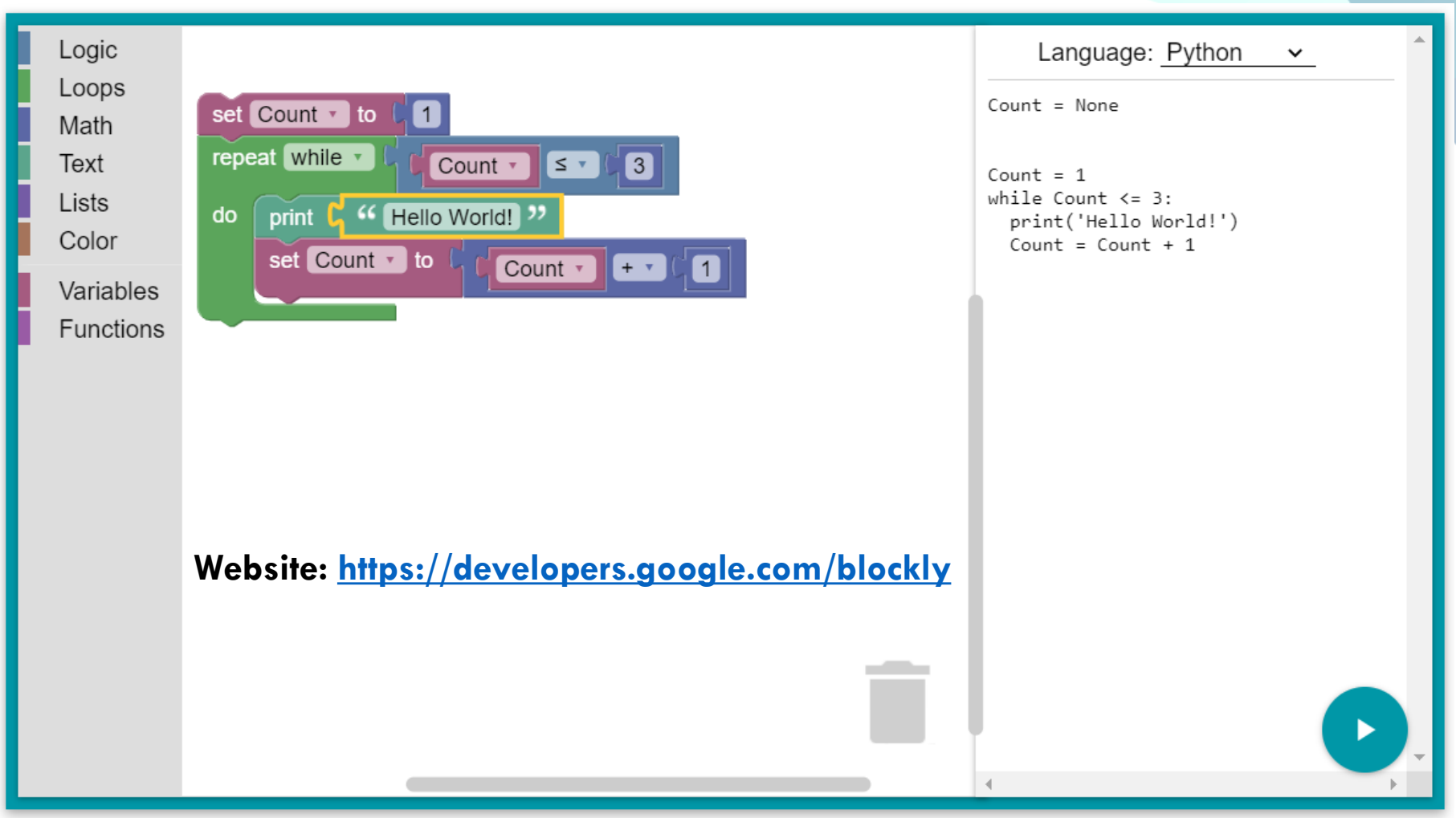
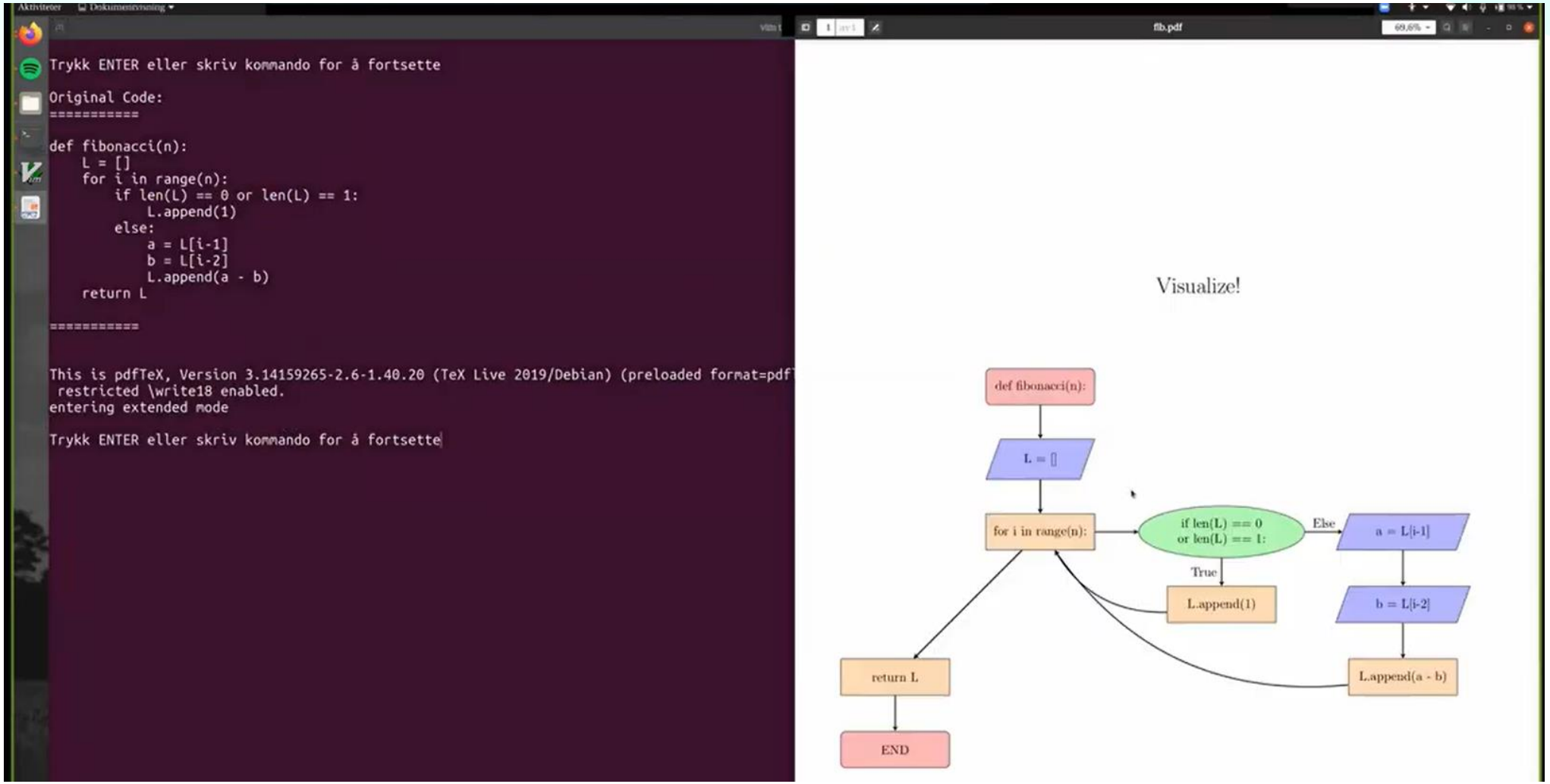


VisuPy- Code Visualization



Website: https://webfest.cern/projects

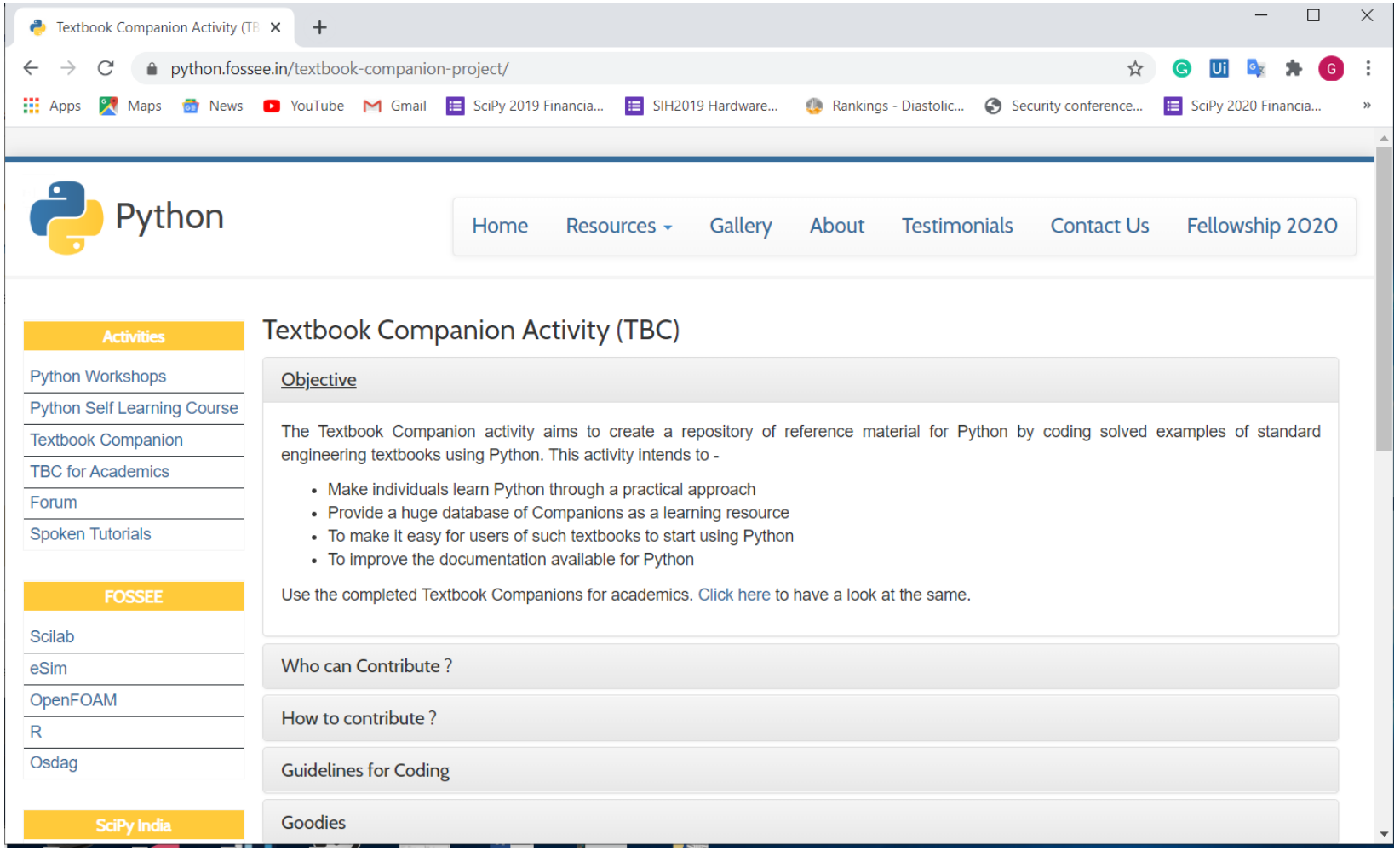
Python Textbook Companion Project by FOSSEE

The Textbook Companion activity aims to create a repository of reference material for Python by coding solved examples of standard engineering textbooks using Python. This activity intends to:

- Make individuals learn Python through a practical approach
- Provide a huge database of Companions as a learning resource
- To make it easy for users of such textbooks to start using Python
- To improve the documentation available for Python

Website: https://tbc-python.fossee.in/

Python Textbook Companion Project by FOSSEE



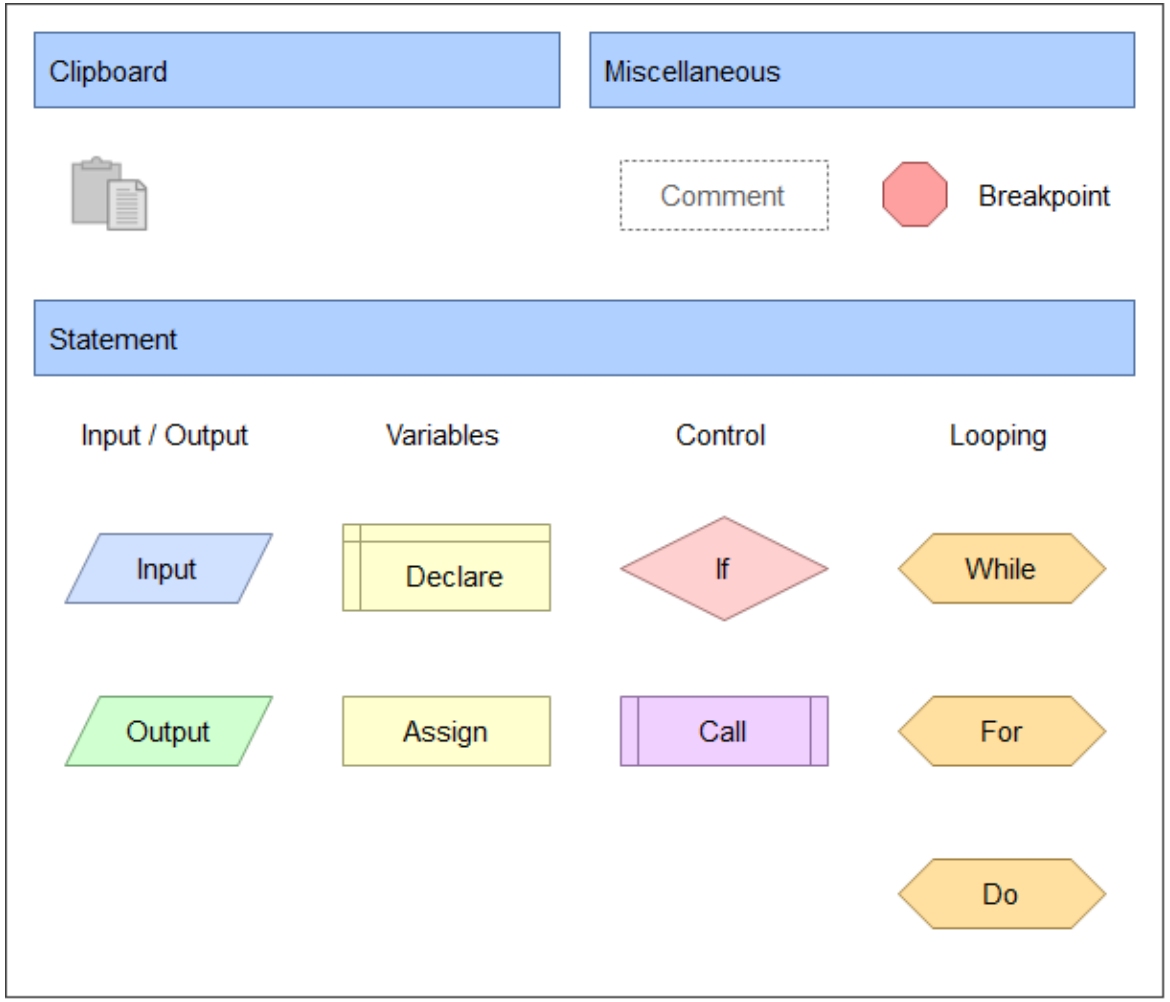
Flowgorithm

- Flowgorithm is a **free** beginner's programming tool that is based on simple graphical flowcharts.
- Typically, when a student first learns to program, they often use one of th e text-based programming languages. Depending on the language, this can either be easy or frustratingly difficult. Many languages require you to write lines of confusing code just to display the text "Hello, world!".
- By using flowcharts, you can concentrate on programming concepts rather than all the nuances of a typical programming language. You can also run your programs directly in Flowgorithm.
- Once you understand programming logic, it is easy for you to learn one of the major languages. Flowgorithm can interactively convert your flowchart to over 18 languages. These include: C#, C++, Java, JavaScript, Lua, Perl, **Python,** Ruby, Swift, Visual Basic .NET, and VBA (used in Office) .

Flowgorithm - Features

- Easy to understand output
- Graphical variable watch window
- Interactively generate real code (18+ languages including Python)
- Safe recursion
- Loops, arrays, and flexible expressions
- Multilingual support (including Korean)

Flowgorithm - Symbols



Flowgorithm

Website: http://www.flowgorithm.org/

Python Code generation from Flowchart

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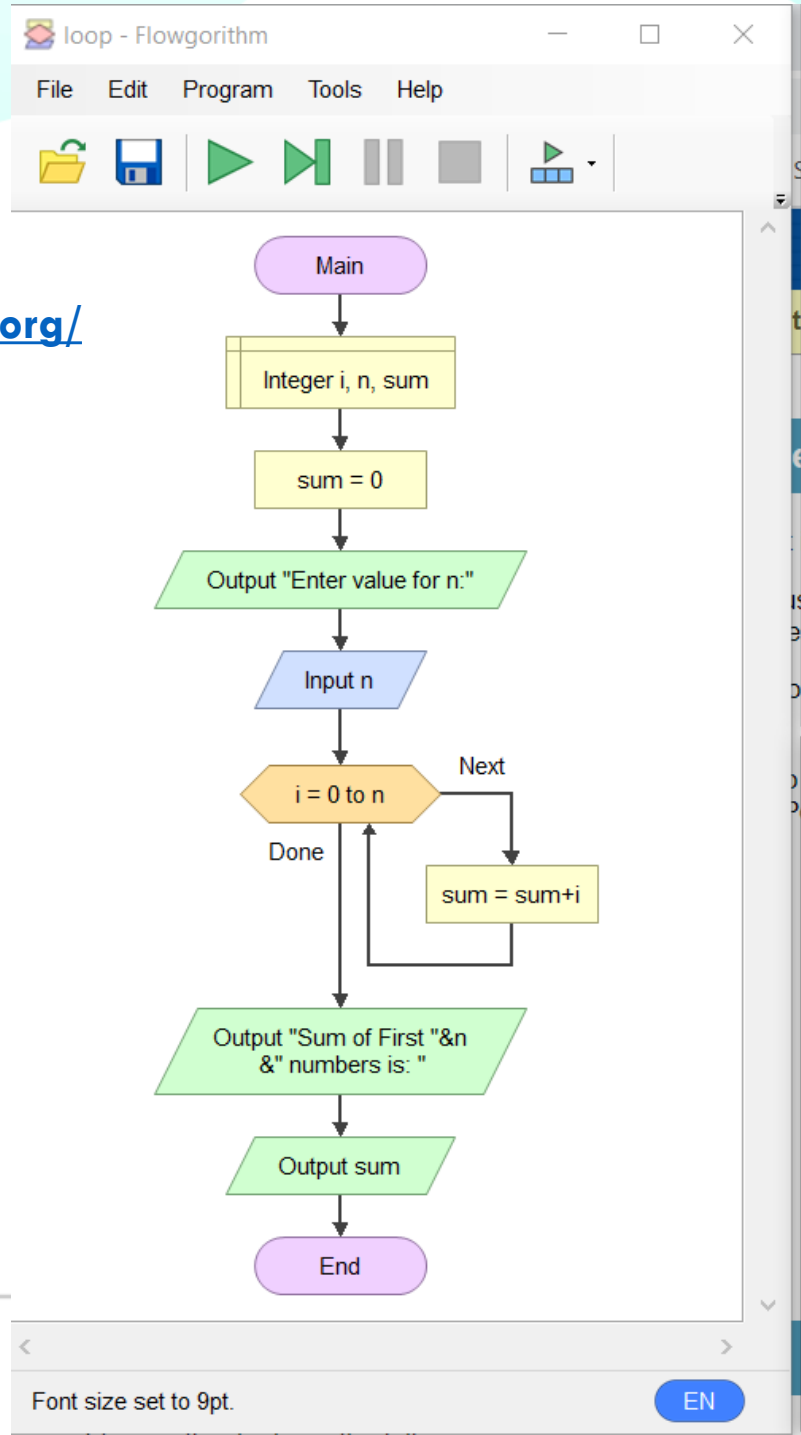
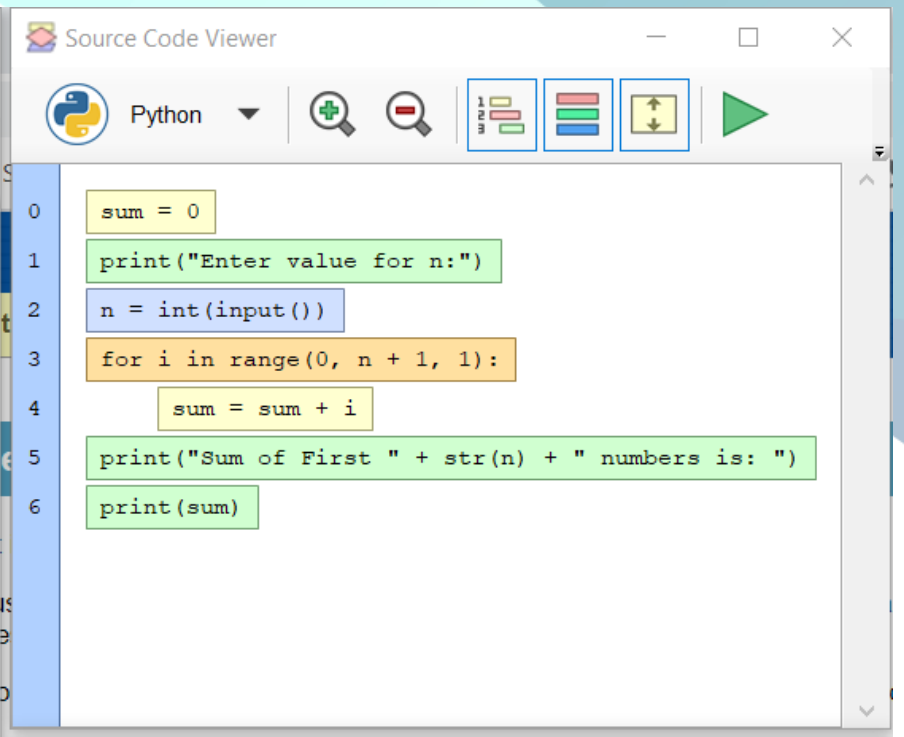
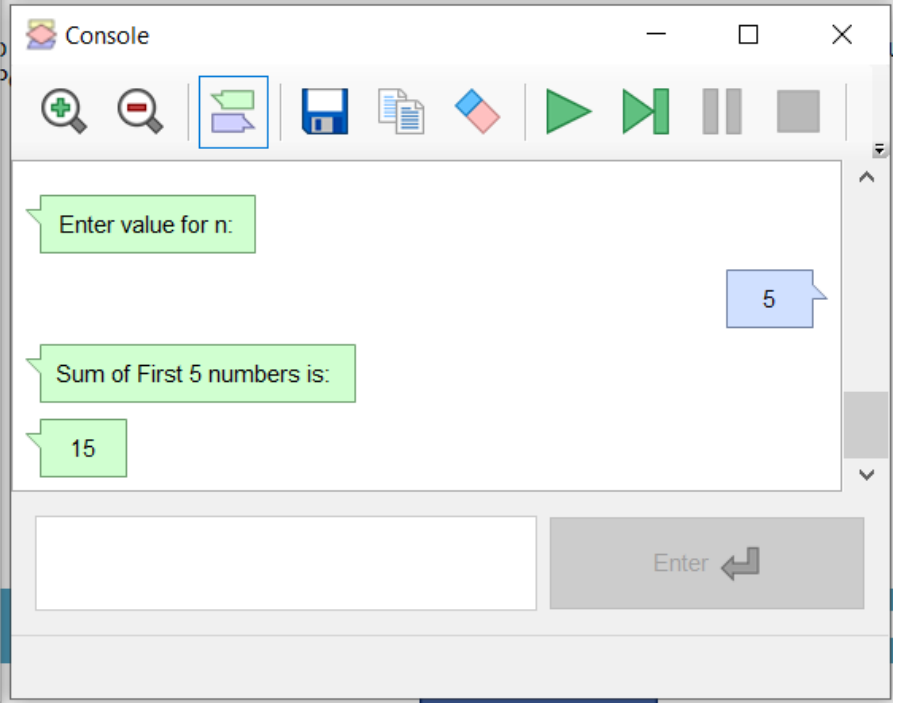
We are Pythonistas







Flowgorithm –Flow Chart Interpreter

Advantages

- Easy to use, drag and drop and corresponding code generation
- Beginner friendly and great tool to learn problem solving

Disadvantages

- Code generation is limited. For example 2 or more dimensional arrays are not supported
- Language specific features (.*) are not supported
- Presently no support for Indic languages

Flowgorithm – Python Template File

Using Python template file add new program-ing language support to flowgorithm

DEMO>>

Python - Notepad

File Edit Format View Help

```
[Language]
Name            = Python
Extension       = py
Keywords        = and, as, assert, break, class, continue, def, del, elif, else
                = except, exec, finally, for, from, global, if, import, in, is
                = lambda, not, or, pass, print, raise, return, try, while, with
                = yield

                =  True, False, None
Conflicts
Case Sensitive = true
Options         =

; ======================================================
; Literals
; ======================================================

[Types]
Integer      =  int
Real         =  float
Boolean      =  bool
String       =  str

[Function ID]
Convention = camel
```

Future Goals

- Add Indic language support for Flowgorithm
- Customize Blockly for more languages
- Code Visualization tools
- More gamified tools to enhance learning

Thank You