

A Survey on Python Programming Language

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Abstract— A variety of programming languages are used to teach fundamentals of programming in secondary schools in Slovakia. Nowadays, we observe a new trend, the Python language gaining ground. In our paper we evaluate the interviews, in which we asked teachers with years of pedagogical experience, what the reasons for selecting a particular programming language where. By analysing the responses we learn about their experience with teaching programming and create a list of the important elements in the selection of the most suitable programming language for secondary school students. We will seek an answer for the question whether the Python programming language is appropriate for all secondary school students. Nowadays a huge amount of programming languages is available, so an often raised question is, which is the best programming language is for teaching programming fundamentals for all students in secondary schools. The current trend shows that more and more universities choose the Python language for teaching basic programming courses.

Keywords: Python Programming Language

I. INTRODUCTION

Python is currently the most widely used multi-purpose, high-level programming language.

- 1) Python allows programming in Object-Oriented and Procedural paradigms.
- 2) Python programs generally are smaller than other programming languages like Python. Programmers have to type relatively less and indentation requirement of the language, makes them readable all the time.
- 3) Python language is being used by almost all tech-giant companies like – Google, Amazon, Facebook, Instagram, Dropbox, Uber... etc.
- 4) The biggest strength of Python is huge collection of standard library which can be used for the following – learning
 - GUI Applications (like Tkinter)
 - Web frameworks like Django (used by YouTube, Instagram, Dropbox)
 - Image processing (like open CV, Pillow)
 - Test frameworks
 - Multimedia
 - Scientific computing

Python is a widely used general-purpose, high-level programming language. It was initially designed by Guido van Rossum in 1991 and developed by Python Software Foundation. It was mainly developed for emphasis on code readability, and its syntax allows programmers to express concepts in fewer lines of code. In the late 1980s, history was about to be written. It was that time when working on Python started. Soon after that, Guido Van Rossum began doing its application based work in December of 1989 by at Centrum Wiskunde & Informatica (CWI) which is situated in Netherland. It was started firstly as a hobby project

because he was looking for an interesting project to keep him occupied during Christmas. The programming language which Python is said to have succeeded is ABC Programming Language, which had the interfacing with the Amoeba Operating System and had the feature of exception handling. He had already helped to create ABC earlier in his career and he had seen some issues with ABC but liked most of the features. After that what he did as really very clever. He had taken the syntax of ABC, and some of its good features. It came with a lot of complaints too, so he fixed those issues completely and had created a good scripting language which had removed all the flaws. The inspiration for the name came from BBC's TV Show – 'Monty Python's Flying Circus', as he was a big fan of the TV show and also he wanted a short, unique and slightly mysterious name for his invention and hence he named it Python! He was the "Benevolent dictator for life" (BDFL) until he stepped down from the position as the leader on 12th July 2018. For quite some time he used to work for Google, but currently, he is working at Dropbox. The language was finally released in 1991. When it was released, it used a lot fewer codes to express the concepts, when we compare it with Python, C++ & C. Its design philosophy was quite good too. Its main objective is to provide code readability and advanced developer productivity. When it was released it had more than enough capability to provide classes with inheritance, several core data types exception handling and functions.

II. RESEARCH DESCRIPTION

Research request is talked in the midst of the finishing reason for each survey organize. The going with fours concentrations traces the investigation stages:

1) Research Phase I:

Investigate existing procedures for learning Python programming for Student and Identify issues with the present techniques before long.

2) Research Phase II:

The part the demonstrator plays essentially, students see you are sensible and dialect structure rules issues in the program and find the courses of action.

3) Research Phase III:

Create headways to vanquish these issues in sensible using Python.

4) Research Phase IV:

Security issues in building up the utilization of Python programming how defeat potential.

III. PYTHON LEARNING METHOD

This is the model of the learning Python programming Language for an understudy in a simple way, it is following the means of learning Python Programming Language.

1) Interest:

Teach the Python Language to Students by Teacher or Guide, when an understudy. Does determination for considering Python, generally does not reap the great outcome.

2) Related Documentation:

The readied gathering of records that depict the structure, reason, operation, support, and information prerequisites for a Python Programming Language.

3) Coaching OR Self-Study:

The fundamental purpose of this reasoning is training additionally includes a noteworthy measure of self-ponder.

4) Books and Tutorials:

A book that gives guideline in a specific range. Instructional exercise is a time of escalated educational cost given by a mentor to an individual understudy.



IV. FEATURES OF PYTHON

A. Object-Oriented Language:

One of the key features of python is Object-Oriented programming. Python supports object oriented language and concepts of classes, objects encapsulation.

B. Free and Open Source:

Python language is freely available at official website Since, it is open-source, this means that source code is also available to the public. so you can download it as, use it as well as share it.

C. GUI Programming Support:

Graphical Users interfaces can be made using a module such as PyQt5, PyQt4, wx Python or Tk in python. PyQt5 is the most popular option for creating graphical apps with Python.

D. Extensible feature:

Python is a Extensible language. we can write our some python code into c or c++ language and also we can compile that code in c/c++ language.

E. Python is Portable language:

Python language is also a portable language. for example, if we have python code for windows and if we want to run this code on other platform such as Linux, Unix and Mac then we do not need to change it, we can run this code on any platform.

F. Interpreted Language:

Python is an Interpreted Language. because python code is executed line by line at a time. Like other language c, c++, java etc there is no need to compile python code this makes it easier to debug our code. source code of python is converted into an immediate form called bytecode.

V. CONCLUSION

I believe the trial has shown conclusively that it is both possible and desirable to use Python as the principal teaching language:

- it is Free (as in both cost and source code).
- it is trivial to install on a Windows PC allowing students to take their interest further. For many the hurdle of installing a Pascal or C compiler on a Windows machine is either too expensive or too complicated;
- it is a flexible tool that allows both the teaching of traditional procedural programming and modern OOP; It can be used to teach a large number of transferable skills;
- it is a real-world programming language that can be *and is* used in academia and the commercial world;
- it appears to be quicker to learn and, in combination with its many libraries, this offers the possibility of more rapid student development allowing the course to be made more challenging and varied;
- and most importantly, its clean syntax offers increased understanding and enjoyment for students;

Python should be used as the first year teaching language. If used it will be possible to teach students more *programming* and less of the peculiarities of a *particular language*. Teaching a mid-level language like C in just one day is inadvisable. Too much time must be spent teaching C and not enough time teaching generic skills to students with no programming experience.

The use of Python as the first year language is not a dead-end. I have tried to emphasise that Python allows the teaching of widely applicable programming concepts. Its use in no way precludes the use of C in a more advanced course. In fact students who go on to use C in later years will have a better grounding in concepts from their introduction to programming than they might have from a C-based introduction. I believe that more students will go on to advanced programming if introduced using Python because introducing programming using C will frustrate and scare off a large number of students.

In conclusion, Python offers the optimum compromise of teachability and applicability.

REFERENCES

- [1] "Python Crash Course" by Eric Matthews is a fast-paced and comprehensive introduction to Python language for beginners who wish to learn Python programming and write useful programs.
- [2] "Head-First Python" by Paul Barry is a quick and easy fix for you if you wish to learn the basics of Python programming without having to slog through counterproductive tutorials and books. The book helps you in gaining a quick grasp of the fundamentals of Python programming and working with built-in functions and data structures.
- [3] "Learn Python the Hard Way" by Zed A. Shaw (3rd Edition) is a collection of 52 correctly collated exercises. You have to read the code and type it precisely. Once typed, you have to fix the mistakes in

the code for a better understanding and watch the programs run. These exercises help you understand the working of the software, structure of a well-written program, and how to avoid and find common mistakes in code using some tricks

- [4] "Python Programming" by John Zelle is the third edition of the original Python programming book published in 2004, the second edition of which released in 2010. Instead of treating this book as a source of Python programming, it is recommended to take it as an introduction to the art of programming. This book introduces you to computer science, programming, and other concepts, only using Python language as the medium for beginners.
- [5] "A Byte of Python" by C.H. Swaroop is a free book on Python programming to guide the beginner audience to an understanding of the Python language. The book discusses the Python 3 version majorly, but also helps you adapt to the older versions of the language.
- [6] "Fluent Python" by Luciano Ramalho is your hands-on-guide that helps you learn how to write useful Python code by using the most neglected yet best features of the language. The author takes you through the features and libraries of the language and helps you make the code shorter, faster, and readable