**Option 4**

What is Python? What can it be used for outside of data science? Provide some real life use cases and business problems being solved by Python.

Python’s website defines Python as “…an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity and code reuse. The Python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms, and can be freely distributed.”

Python is advantageous, not only because it’s large documentation availability but also because it is open source and counts with several free tutorials and forums that allow programmers to learn and collaborate easily. The capabilities of Python are endless and it’s increased productive is often an advantage since no compiling is needed which allows for a faster life-cycle of programming, debugging and testing.

Python has several different libraries and packages that adapt to different use cases way beyond data science. Just like any other programming language, Python is used virtually everywhere. Sharma (2020) compiled a list of the top 10 uses of Python in the real world:

* Web Development
* Game Development
* Scientific and Numeric Applications
* Artificial Intelligence and Machine Learning
* Desktop GUI
* Software Development
* Enterprise-level/Business Applications
* Education programs and training courses
* Language Development
* Operating Systems
* Web Scraping Applications
* Image Processing and Graphic Design Applications:

In game development, for instance, Python’s libraries like PySoy (a 3D game engine that supports Python 3) and PyGame are widely used. Python is the foundation for popular games like Battlefield 2, Frets on Fire, World of Tanks, Disney’s Toontown Online, Vega Strike, and Civilization-IV. Game designers can also use Python for developing tools to simplify specific actions such as level design or dialog tree creation, and even use those tools to export those tasks in formats that can be used by the primary game engine. Also, Python is used as a scripting language by many game engines.

Additionally, Python is the secret ingredient behind many operating systems as well, most popularly of Linux distributions. Linux-based Ubuntu’s Ubiquity Installer and Fedora and Red Hat Enterprise’s Anaconda Installer are coded in Python. Even Gentoo Linux leverages Python Portage (package management system). Usually, Python is combined with the C programming language to design and develop operating systems.

Python’s high performance, scalability, flexibility, and readability are just the features required for developing fully-functional and efficient business applications. Furthermore, Python has other tools for business application development, like: Odoo: an all-in-one management software that forms a complete suite of enterprise management applications; Tryton: a three-tier, high-level, general-purpose application platform, is another fantastic tool for building business applications.

Python is an extremely powerful programming language that has grown to become one of the most popular among code developers in different industries. In Data Science, together with R is one of the most used software.

Python. <https://www.python.org/doc/essays/blurb/>

Sharma Rohit. March 11, 2020. *Top 12 Fascinating Python Applications in Real-World.* <https://www.upgrad.com/blog/python-applications-in-real-world/>