

Assignment no .1

- What is python?

Python is an interpreted, object oriented, high level programming language with dynamic semantics developed by Guido Van Rossum 1991

- What is IOT?

It is a network of electronic devices that consist of software, sensors, actuators, and connectivity which allows these things to connect, interact and exchange data.

- Why Python for IOT?

Python language is one among the most popular programming language for IOT. The coding flexibility and dynamic nature of python helps developers in creating intelligent IOT devices.

- How will python work in OTT platform, in Facebook, Netflix, Google, Instagram and check their roles.

1. Netflix

Netflix company has detailed the ways it uses Python, one of the world's fastest growing languages, for everything from operations management and analysis through to security and networking.

Netflix relies on a mix of well-known packages and in-house software libraries, with Python seemingly used in nearly every corner of the business, which is largely run on the Amazon Web Services (AWS) cloud platform.

“We use Python through the full content lifecycle, from deciding which content to fund all the way to operating the CDN that serves the final video to 148 million members,”

Netflix's CORE team uses many Python statistical and mathematical libraries, also including **NumPy**, **SciPy**, **ruptures**, and **Pandas**, which help analyse thousands of signals after an alert.

Python has also been used to develop a time series correlation system, as well as a distributed worker system to parallelize large analytic workloads.

On top of that, Python is also typically used for automation tasks, data exploration and cleaning, and visualization.

Netflix's information security team uses Python for a wide variety of tasks, including security automation, risk classification, auto-remediation, and vulnerability identification.

2. Facebook

Python is the third most favored programming language that is currently being used at Facebook after PHP and C++.

Usually, production engineers use Python to maintain thousands of libraries and binaries Facebook's infrastructure.

Over 21% percent of overall codebase infrastructure is covered by Python at Facebook while rest is covered by Java, C, and C++ with 9%, 15%, and 55% respectively.

Maintaining thousands of libraries and binaries distribution is done with Python.

Use of Python's framework Py3 increased by 5% as of May 2016.

From 2016 to till date, an average of 5000 codes is modified by more than 1000 committers on

The main focus of the infrastructure team is to deliver and maintain Python client libraries for the interface and binary communication protocol that enables other teams who want to interact with them by offering reliable interfaces.

With the help of these interfaces, the amount of code that is written, tested and maintained by production engineers is reduced, enabling them to move ahead at a faster pace in integrating services to Facebook's infrastructure.

➤ **Services Driven by Python at Facebook**

Currently, Python is responsible to drive various services at Facebook which are listed below:

- **Network Switch Setup and Imaging:** Python helps the service to form a successful communication bridge among network devices.
- **Whitebox Switch CLIs:** Python enables full-scale network deployment that enables the client to manage switches from a CLI interface.
- **Service Turn-up:** Python provides core service such as DNS, Chef etc turn-up with the support of a pluggable system known as Kobald.
- **Hardware Faults:** It also enables auto-remediation of service failures and faults in service in hardware.
- **Scheduling Maintenance Work:** Using Dapper it also helps in automating and scheduling maintenance work.
- **Testing and Repair management:** Using Cyborg Python helps in burn-in testing, server imaging, and repair management
- **Server Check:** Also, it helps in detecting fault and diagnosis with the help of Machinechecker. Machinechecker is CLI utility software that checks the health of Facebook's servers.

3. Spotify

Spotify is a music streaming service that gives access to millions of songs to the listeners, globally. The platform had 124 million paid subscribers in the fourth quarter of 2019. 36% of subscribers to music streaming services worldwide in 2017 had a subscription with Spotify.

In one of its technology article, Spotify talks about why it uses Python for development and says:

“Speed is a big focus for Spotify. Python fits well into this mindset, as it gets us big wins in the speed of development. We also make heavy use of Python async frameworks to help services that are IO-bound.”

4. Instagram

As the majority of us know, Instagram is the biggest photograph sharing online media platform to more than 500 million users, with 50 million pictures and videos transferred on Instagram on a daily basis.

The application permits its vast majority of users in all age groups to upload media that can be altered with filters and matched by hashtags and geotagging. Posts can be shared openly among followers. Users can view other users trending content and post it to their feed. Users can like and share photographs and videos.

So on a daily basis, it has a huge amount of data and huge potential. Instagram has multiplied in size throughout the most recent two years and as of late crossed 500 million users, so there arises a solid need to expand efficiency and speed with the goal that their services can keep on scaling easily.

To help the scaling and efficiency, engineers at Instagram have created static sort checkers using Python and Pyre, which Instagram uses to investigate its servers.

That is the reason Instagram engineers have created and used many modules for Python and used Python's beyond-the-border capabilities. Also, Instagram uses Python for fast iterations as it hardly takes a moment to restart after testing new features. In the past year, Instagram has made efficiency and speed its top priority by engaging in Django tiers.

For error bugs, Instagram uses Sentry which is an open-source Django application composed by the group. Django Object Relational Model is reassuringly secure and exceedingly scalable and can deal with an information base of 5 million users thus becoming the core of Instagram by using integrated services of MVT architecture which also has an extensible authentication system.

So, the above are some of Python's capabilities in Instagram, the powerful tool built in Python.

5. Google

Python has been a major part of the Google company right from its beginning stage. In fact, Python is the authentic official language of Google, Besides, Java and C++. Python has significantly supported Google and in turn, they promote and support the language actively.

Programmers of Google, use Python for Google build system, and various system administration tools like log analysis, report generation, binary data pusher, code

review tool, Google internet packing format, A/Q and testing, and other Google App Engines Apps.

Python's biggest strengths are its rapid development and scalable performance. Because of these reasons,