





Agenda

- Python overview & AWS Project Discussion

Python

- ▶ Python is a high-level, interpreted programming language known for its simplicity and readability.

use case -1- Web Application Development

- ▶ Java — 1) servlets 2) JSP 3) Spring 4) JSF
- ▶ .Net — [ASP.net](#)
- ▶ Python — Web frame works
 - ▶ Django, Pyramid (big web applications)
 - ▶ Bottle, flask (Micro web application)
 - ▶ Plone, Django CMS (nano we applications)

Library / APIs

- ▶ This month calendar needs to display.
- ▶ `#print("hello python world")`
- ▶ `#print(calendar.month(2024,8))`

- ▶ Calendar = module
- ▶ Month = function
- ▶ Inside calendar module we have 1 function that is called Month.
- ▶ `#import calendar`
- ▶ `#print(calendar.month(2024,8))`
- ▶ `#print(calendar.calendar(2024))`
- ▶ `#print(calendar.month(2024,12))`

use case -2- GUI Application Development

- ▶ Python — module
 - ▶ 1- tkinter

use case -3- Console based Application Development (calendar, calculator, video games)

- ▶ 1- REPL — Read - Eval - Print - Loop
- ▶ Files — io - - Pickling / un-pickling (how to storage student data etc)

use case - 4- Software Development Building Tools

- ▶ 1- OS — release — Building tools (installer and installing packages)

use case -5- Business Application

- ▶ 1- ERP applications (supermarket)
- ▶ E-commerce Applications (Amazon, eBay)
- ▶ Standard application (which is required to complete daily task)
 - ▶ Google Chrome, MS Office, Internet explorer

use case - 6- Data Science Application / AI - Machine learning -

- ▶ Numpy
- ▶ Pandas

use case -7- Scientific Application Development

- ▶ Scipy
- ▶ NASA — Collaborated with ISRO

Top Companies Using Python

NETFLIX

JPMorganChase



You Tube

pandora



Bitbucket

shutterstock



Prezi

Vine

yelp

Udemy

facebook

Bank of America

UBER

Google



asana



freelancer

redhat



Quora



IBM

@mailgun

moz://a

twilio

amazon

Expedia

Spotify

DISQUS

SurveyMonkey

glassdoor



reddit

hike

YAHOO!

9GAG

Mit

Massachusetts
Institute of
Technology

NOKIA

SendGrid

redis

the ONION

trivago

What is Python?

(<https://www.youtube.com/watch?v=J0Aq44Pze-w>)

- **High-Level Language:** Python is designed to be easy to read and write, making it accessible to beginners while powerful enough for experienced developers.
- **Interpreted Language:** Python code is executed line by line, which makes it easy to test and debug.
- **Dynamic Typing:** Python handles data types automatically, allowing for more flexibility in coding.
- **Extensive Libraries and Frameworks:** Python has a vast ecosystem of libraries and frameworks that simplify tasks like data analysis, web development, machine learning, and more.

Why Python?

Ease of Learning: Python's straightforward syntax makes it an excellent choice for beginners. Its code is often more concise and readable compared to other languages.

Versatility: Python can be used for a wide range of applications, from web development to data science and artificial intelligence.

Community Support: Python has a large, active community that contributes to its libraries and offers support through forums and tutorials.

Productivity and Speed: Python allows developers to write and deploy code quickly, thanks to its simplicity and rich set of tools.

History of Python?

- **The python programming language foundation stone has laid in the year 1980.**
- **The python programming language development started in the year 1989.**
- **The python programming language officially released in the year 1991 feb.**
- **The python programming language Developer by “Guido Van Rossum”.**
- **The python programming language developed CWI in nether lands.**
- **The python programming language maintained by non-commercial organisation Python Software Foundation (PSF).**

Features

- **Python programming Provides “Rich Set of APIs”. So that python programmer can re-use the pre-defined code without writing our own code.**
- **An API is a collection of Modules, A Module is a collection of Functions, variables and classes.**
 - **Example : cmath, calendar, random.....etc**
- **Python programming provides in-built facility called “Garbage Collector”.**
 - **Garbage collector is one of the python background program, which is running behind of every regular python program and whose role is to collect un-used memory space and improves the performance of python based application.**

Data Types

- **Data Types** : Allocating memory space for input

Encoding

- The process of conversion of data from one form to another form is known as Encoding
- Computer understands only binary language of 0s and 1s. Therefore, when a key on the keyboard is pressed, it is internally mapped to a unique code, which is further converted to binary.
- Example: When the key “B” is pressed, it is internally mapped to a decimal value 66 (code value) which is then converted to its equivalent binary value for the computer to understand.

American Standard Code for Information Interchange

- ASCII is the most common character encoding format for text data in computers.
- Launched in 1960s in 7-bit coding scheme. $2^7=128$
- in standard ASCII-encoded data, there are unique values for 128 alphabetic, numeric, or special additional characters and control codes.

Indian Script Code for Information Interchange

- ISCII it is a coding scheme for representing various writing systems of India.
- It is 8-bit code representation for Indian languages which means it can represent $2^8=256$ characters.

128 from ASCII and remaining 128 from Hindi

Unicode

- UNICODE has been developed to incorporate all the characters of every written language of the world.
- Commonly use UNICODE encodings are UTF-8, UTF-16 and UTF32.

Boto3

Boto3 is the Amazon Web Services (AWS) SDK (Software Development Kit) for Python. It allows developers to interact with AWS services and resources in a Pythonic way. Boto3 provides an easy-to-use API to automate various tasks on AWS, such as creating and managing resources, deploying applications, and accessing AWS data services.

Common use cases

- **Managing EC2 Instances:** Starting, stopping, and managing EC2 instances programmatically.
- **S3 Operations:** Uploading, downloading, and managing files in Amazon S3.
- **DynamoDB:** Interacting with NoSQL databases using DynamoDB.
- **Lambda Functions:** Invoking AWS Lambda functions.
- **IAM Management:** Managing AWS Identity and Access Management (IAM) roles and policies.
- **CloudWatch:** Monitoring and logging AWS resources using CloudWatch.