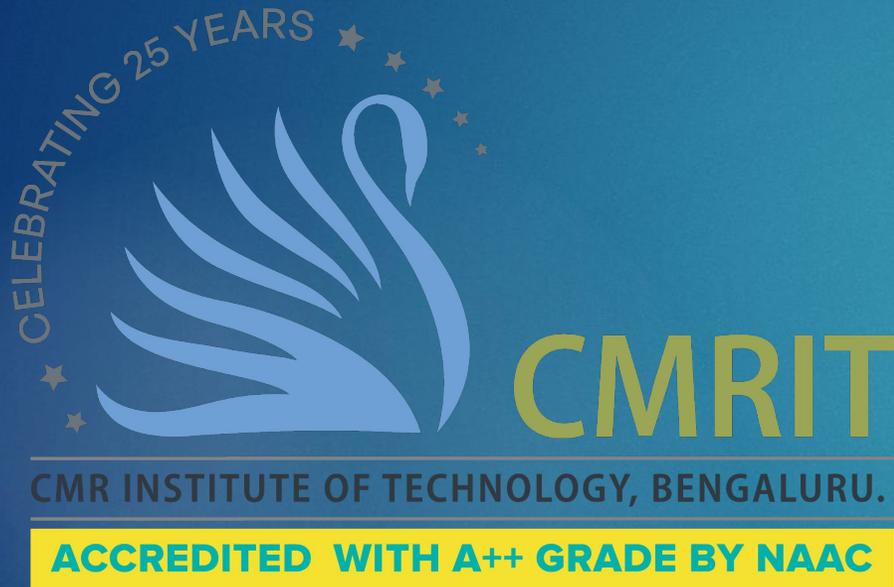


Expectation Setting Overview (Day-1)



Subject: TYL – P3 Python

Semester : IV

Course Instructor:

Deepa H, Nivedita VS

Agenda

Day-01

- Introduction
- Student perspective
- Introduction to subject
- Why subject is important
- Real World Applications
- Course Objectives
- Pre-requisites
- Course Outcomes
- CO-PO mapping
- Quiz

Day-02

- Textbooks and Reference books
- Lesson Plan
- Assessment Plan
- Expected classroom behavior
- Some useful links

Introduction to Teachers

Deepa H

- ▶ Assistant Professor, Department of ISE
- ▶ deepa.h@cmrit.ac.in
- ▶ Mobile no: 9790924466

Nivedita VS

- ▶ Assistant Professor, Department of ISE
- ▶ nivedita.vs@cmrit.ac.in
- ▶ Mobile no: 9566993888

Meeting Timings – 8am to 4pm

Students perspective

Students introduction

Expectations – Questions

what do
YOU
expect?



Python Programming

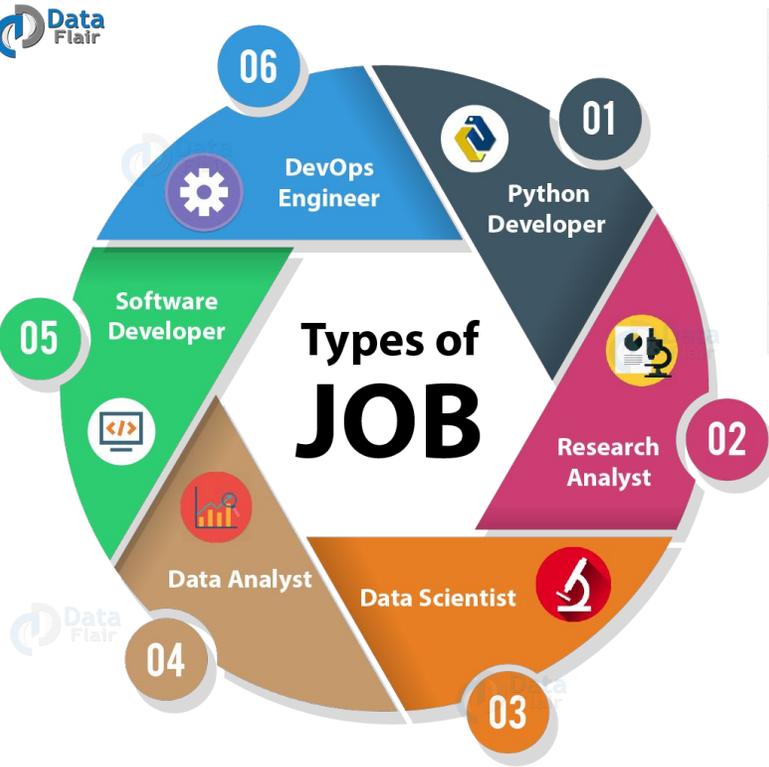
- ▶ Python can be used on a server to create web applications.
- ▶ Python can be used alongside software to create workflows.
- ▶ Python can connect to database systems. It can also read and modify files.
- ▶ Python can be used to handle big data and perform complex mathematics.
- ▶ Python can be used for rapid prototyping, or for production-ready software development.

What is Python?

- General purpose programming language
- High level
- Object oriented

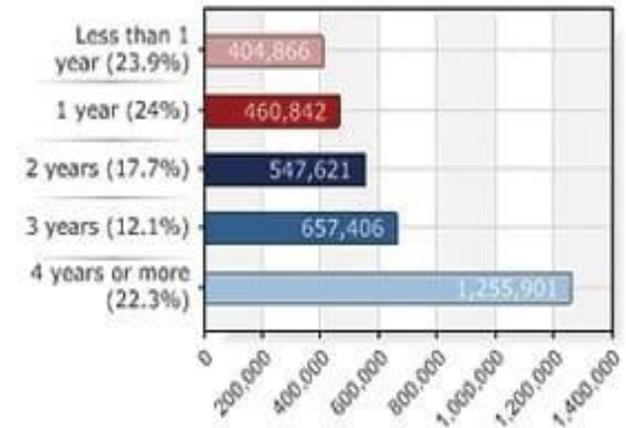
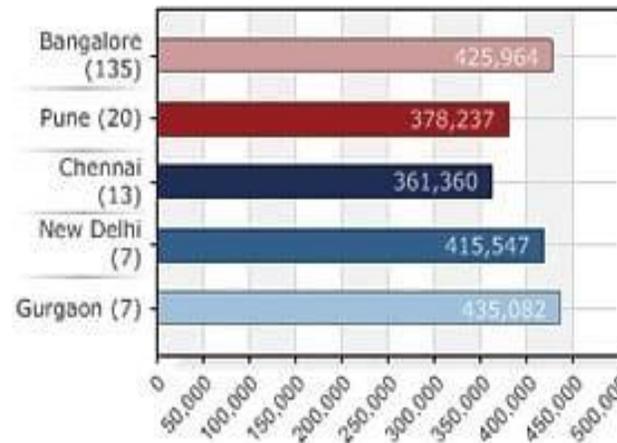
Guido van Rossum
Invented the Python Language
https://en.wikipedia.org/wiki/Guido_van_Rossum

Why Python programming is important?



Job Role	Average Salary per annum
Data Scientist	₹698,413
Machine Learning Engineer	₹671,548
Python Web Developer	₹309,161
Full stack developer salary in India for fresher	₹375,000
Python Django Developer Salary in India	₹6,04,000
Python programmer salary in India	₹427,293

Simple Elegant Syntax
Easy Learning
High Expressiveness
Good Marketable Skill



Features of Python

- ✓ Simple
- ✓ Easy to Learn
- ✓ High-level Language
- ✓ Python is a Beginner's Language
- ✓ Portable
- ✓ Interactive
- ✓ Interpreted
- ✓ Object Oriented
- ✓ Extensible
- ✓ Embeddable
- ✓ Extensive Libraries
- ✓ Databases
- ✓ GUI Programming
- ✓ Scalable

Core Competency Acquired by Students

- ▶ Strong logical and problem-solving skills
- ▶ Understanding of programming basics
- ▶ Ability to write structured and efficient code
- ▶ Working with data and simple data structures
- ▶ Debugging and error-handling skills
- ▶ Developing small real-world applications

IDEs For Python



Google Colaboratory



Real Time Applications

- ▶ Web application development
- ▶ Data analysis and visualization
- ▶ Artificial Intelligence & Machine Learning
- ▶ Automation and scripting tasks
- ▶ Software and game development
- ▶ IoT and embedded system applications

Industry Roles

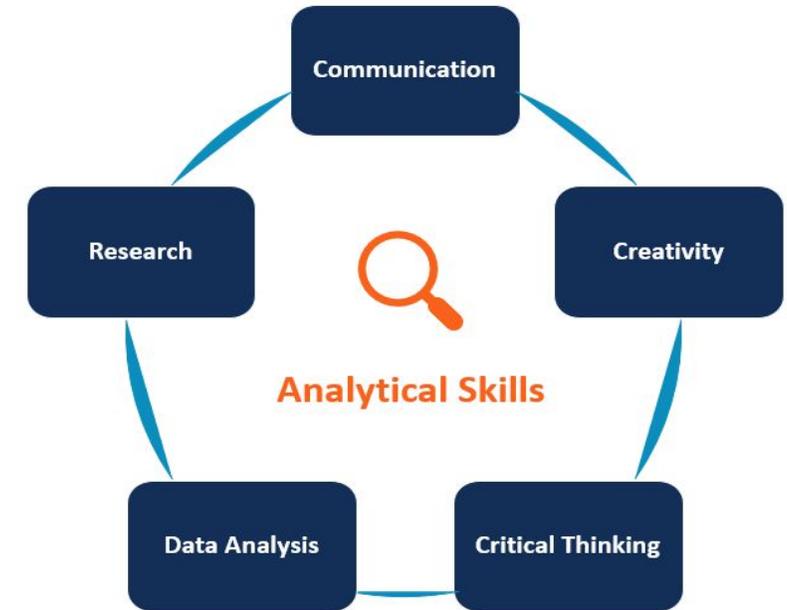
- ▶ Python Developer
- ▶ Data Analyst
- ▶ Machine Learning Engineer
- ▶ Web Developer
- ▶ Automation/Test Engineer
- ▶ Software Developer

Course Objectives

- ▶ Understanding of Python's fundamental concepts, data types, collections, and functions, enabling them to write Python code effectively.
- ▶ Illustrate the Object Oriented Programming concepts to solve computational problems
- ▶ Comprehensive understanding of algorithm design concepts and data structures to analyse and develop efficient algorithms for problem-solving.
- ▶ Display a comprehensive understanding of database concepts, SQL fundamentals, and practical skills for working with databases using SQLite and Python

Pre-requisites

- Analytical and logical thinking to analyze problem and come up with solution
- Basic knowledge of Programming

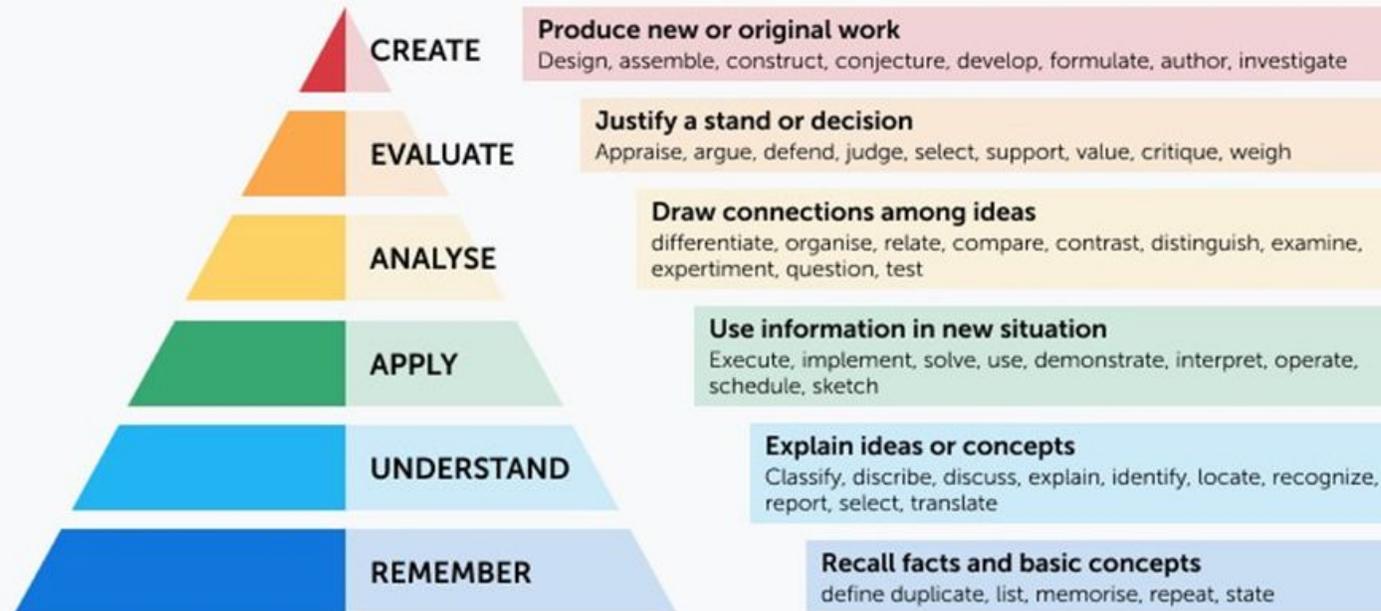


Course Outcomes

- ▶ Examine Python syntax and semantics and be confident in the use of Python control flow structures, functions, core data structures like Lists, Dictionaries and the use of Regular Expressions.
- ▶ Interpret Object-Oriented Programming concepts and Data Modelling in Python.
- ▶ Design, analyse, and implement algorithms, as well as effectively utilize fundamental data structures, to tackle complex problem-solving challenges and optimize code for efficiency.
- ▶ Proficient in database management, SQL query execution, and database design principles.

Blooms Level

Bloom's Taxonomy



CO-PO mapping

Course Outcomes		Blooms Level	Modules covered	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Write Python programs using functions, loops, and built-in features.	L3	PAR TA - 1	2	2	1	-	3	-	-	-	-	-	-	2	3	2	1
CO2	Use lists, tuples, sets, and dictionaries to solve real-time problems.	L3	PAR TA - 2,4	2	3	2	-	3	-	-	-	-	-	-	2	3	3	1
CO3	Perform string manipulation and apply regular expressions for pattern matching.	L3	PAR TA - 3	2	2	1	-	3	-	-	-	-	-	-	2	3	2	1
CO4	Implement object-oriented concepts and use iterators/generators efficiently.	L4	PAR TA - 4,5	3	3	2	1	3	-	-	-	1	-	-	2	3	3	2
CO5	<i>Solve basic DSA problems using searching, sorting, two-pointer method, and hash maps.</i>	<u>L3,L</u> 4	PAR TB - 5	3	3	2	2	3	-	-	-	1	-	-	3	3	3	2

Quiz of Day 1

- What is the second CO?
- Differentiate between Course Objective and Course Outcome?
- Differentiate between C,C++,JAVA & Python?
- What is the significance of this course to ISE students?

Expectation Setting Overview (Day-2)



CMR INSTITUTE OF TECHNOLOGY, BENGALURU.

ACCREDITED WITH A++ GRADE BY NAAC

Subject: TYL – P3 Python

Semester : IV

Course Instructor: Deepa H, Nivedita VS

Text books and Reference books

1. Al Sweigart, “Automate the Boring Stuff with Python”, 1st Edition, No Starch Press, 2015. (Available under CC-BY-NC-SA license at <https://automatetheboringstuff.com/>)
2. Paul Barry, “Head First Python”, 2nd Edition, O'Reilly Media, Inc, 2016, ISBN: 9781491919538
3. Roberto Tamassia, Michael H Goldwasser, Michael T Goodrich, “Data Structures and Algorithms in Python”, 1st Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978- 8126562176

Reference Books:

1. Wesley J Chun, “Core Python Applications Programming”, 3rd Edition, Pearson Education India, 2015. ISBN-13: 978-9332555365

Lesson Plan-Modules

Module – 1

Review of Basic Programming & Functions: Quick recap of data types, Operators, variables, Input/Output, Branching, Loops
Advanced Functions: Lambda functions, Map, Filter, Reduce, Recursion (advanced problems)

Module – 2

Lists: Review of list operations, list comprehensions, usage of built-in functions like `zip()`, `enumerate()`, `all()`, `any()`. Tuples: Packing, unpacking, and returning multiple values from functions. Sets: Creation, operations (union, intersection, difference, symmetric difference), and methods (`add()`, `remove()`, `discard()`, `update()`).

Module – 3

Strings and Regular Expressions: String manipulation in Python, String methods and functions. Regular expressions: Patterns matching using `re.match()`, `re.search()`, `re.findall()`, `re.sub()`. Solving string-related problems, Text Processing utility.

Lesson Plan-Modules

Module 4:

Dictionary: Dictionary comprehension, with conditions, defaultdict, OrderedDict, ChainMap, Counter (from collections), Dictionary-based problem solving (e.g., frequency map, anagram grouping, caching). Iterators and Generators: Iterator protocol (`__iter__`, `__next__`), generator functions using yield, generator expressions, use cases.

MODULE 5:

Object Oriented Programming Concepts: OOPs basics: Classes and Objects, Abstract method, Static Attributes, Methods, Counter, Inheritance, Overriding, super, types. Review of DBMS

Assessment plan

Question Paper Pattern and Evaluation Method:

Part A: Two coding questions – 20 marks and 30 marks

Part B: 10 MCQs (20 marks) and 1 coding question (30 marks)

Minimum passing marks: 60%

Experience from previous batch students

Previous batch students shared that learning Python greatly improved their logical thinking and problem-solving skills. They found Python easy to understand and beginner-friendly, which helped them gain confidence in programming. Many students were able to build small real-time projects and apply their knowledge in internships.

Some useful links

- <https://infytq.infosys.com/>
- <https://www.geeksforgeeks.org/python-programming-examples/>
- <https://www.geeksforgeeks.org/data-structures/>

- ▶ Students need to be more attentive during session and respond to questions when required.
- ▶ Students need to check google class room regularly for ppts, videos, assignment posts and quiz.
- ▶ Attendance should be maintained minimum 85%



*Thank
You*