



Activity Report on

"ISTE Approved 6 Days STTP on Hands-On Training On Python To Solve Complex Problem"

- **Title of the Program:** - 6 Days Short Term Training Program (STTP) on **Hands-On Training On Python To Solve Complex Problem**
- **Organized by:** - Department of Computer Science & Engineering, MGI-COET, Shegaon.
- **Date :-** 27th July 2026 to 1st August 2026
- **Time:** 10:00 AM to 5:00 PM
- **Approved by :-** Indian Society for Technical Education (ISTE)
- **Venue:** - Dr. C. V. Raman Hall, Second Floor, MGI-COET, Shegaon, Maharashtra.
- **Duration :-** 6 Days
- **Audience:-** Students (70) and Faculty (3) Total = 73
- **Mode :-** Offline
- **Instructor:** Dr. A. S. Manekar , HOD CSE, MGI-COET Shegaon.

Objective of the Training Program

The objective of "Hands-On Training On Python To Solve Complex Problem" is to bridge the gap between theoretical programming concepts and practical industry applications, To understand structural conventions of python and To explore advanced Libraries. The primary goal of this training is to bridge the gap between theoretical knowledge of Python syntax and its practical application. It focuses on breaking down large, ambiguous, or computationally intensive problems into manageable components and solving them efficiently using Python's extensive ecosystem.

Overview of the Program

An overview of "Hands-On Training on Python to Solve Complex Problems" covers a structured framework designed to transition learners from basic programming concepts to building functional, optimized solutions for real-world challenges.



Late Purushottam Hari (Ganesh) Patil Shikshan Sanstha's
Mauli Group of Institution's,
College of Engineering & Technology, Shegaon.
Department of Computer Science & Engineering
Session: 2026-2027



Program Details

Circular or Brochure: -



Late Purushottam Hari (Ganesh) Patil Shikshan Sanstha's
MAULI GROUP OF INSTITUTION'S
COLLEGE OF ENGINEERING & TECHNOLOGY SHEGAON
AICTE Approved Affiliated to Sant Gadge Baba Amravati University, Amravati, ISO 9001 2015 Certified



Department of Computer Science And Engineering

ISTE Chapter

Organising

One Week Short Term Training Program(STTP)

on

“Hands-On Training On Python To Solve Complex Problem”

from

Date: 27/07/2026 to 01/08/2026

Venue: Dr. C. V. Raman Hall

Name of Resource Person: Dr. A. S. Manekar



Session Highlights

Day 1: Introduction to Foundations of Python

- Syntax & Variables: Python uses clean, readable syntax without semicolons, relying on indentation (whitespace) to define code blocks. Variables are dynamically typed (no need to explicitly declare data types)..
- Core Data Types: Integers (int), Floating-point numbers (float), Strings (str), Booleans (True, False), and collections like Lists, Tuples, Dictionaries, and Sets.
- Operators: Arithmetic (+, -, *, /), Comparison (=, !=, >, <), and Logical (and, or, not)

Day 2: Control Flow: Conditional Statements

Conditional statements allow a program to evaluate data and choose different execution paths based on whether a boolean expression is True or False.

- Conditional Statements: 'if', 'else if', 'else' statements for decision-making.
- if Statement: Executes a block of code only if the specified condition is met
- if-else Statement: Provides an alternative block of code if the primary condition evaluates to False
- elif (Else If): Chains multiple conditions together to check several possibilities sequentially.
- match-case (Structural Pattern Matching): Introduced in Python 3.10, this acts as an advanced switch-case statement to match complex patterns.

Loops are used to execute a block of code repeatedly until a specific condition changes or a sequence is completely traversed.

- for Loop: Ideal for iterating over a sequence (such as a list, tuple, string, or range).
- while Loop: Continues to run as long as its governing condition remains True.

Day 3: Built-in Data Structure & Strings

Python's core data structures are categorized by their mutability (ability to change) and ordering:

- Lists (list): Ordered, mutable sequences used to store heterogeneous collections of items. Defined using square brackets [].



- Tuples (tuple): Ordered, immutable sequences often used to protect integrity for fixed data. Defined using parentheses ().
- Dictionaries (dict): Unordered (ordered in Python 3.7+), mutable collections of key-value pairs ({key: value}) optimized for fast lookups.
- Sets (set): Unordered collections of unique elements used for mathematical operations like unions and intersections.

A string is an immutable sequence of Unicode characters. Because strings are immutable, any modification creates a new string object rather than altering the original. Strings can be enclosed in single ('...'), double ("..."), or triple quotes ("..." or "..." for multiline text).

Day 4: Modular Programming and Exception Handling

Modular Programming and Exception Handling are two critical pillars for writing robust, scalable, and maintainable Python applications. Modular programming allows you to break a massive script into smaller, reusable files (modules), while exception handling ensures your program can gracefully recover from unexpected runtime errors rather than crashing abruptly.

- Modular programming is the process of dividing a large program into separate, interchangeable files called modules.
- A module is simply a file containing Python code (functions, classes, variables) with a .py extension. You can import this file into other scripts to reuse its functionality.

Importing Modules

- Introduction to OOP: Concepts like objects, classes, abstraction, encapsulation, inheritance, and polymorphism. Standard Import: `import math` (Access functions via `math.sqrt()`).
- Specific Import: `from math import sqrt, pi` (Access directly as `sqrt()` or `pi`).
- Aliasing: `import pandas as pd` (Renames the module for convenience)

Exception Handling

Errors in code generally fall into two categories: Syntax Errors (detected before execution due to bad grammar/spelling) and Exceptions (errors that occur during execution, such as dividing by zero or trying to open a file that doesn't exist). Exception handling allows your program to intercept these errors, manage them, and keep running.



Day 5: Scientific Computing

Scientific Computing and Data Analytics represent the intersection of advanced mathematics, computer science, and domain-specific analysis. In Python, this domain leverages a powerful ecosystem of specialized libraries designed to handle heavy numerical calculations, manipulate massive datasets, and extract actionable insights.

- **The Core Stack for Scientific Computing**

Scientific computing focuses on high-performance numerical operations, mathematical modeling, and solving complex equations.

- NumPy (Numerical Python): The absolute bedrock of scientific computing in Python. It introduces the ndarray (N-dimensional array), which allows for lightning-fast vectorized operations, linear algebra, and matrix manipulations far more efficiently than standard Python lists..
- SciPy: Built on top of NumPy, SciPy provides high-level mathematical algorithms for specialized tasks. This includes numerical integration, optimization routines, differential equation solvers, signal processing, and spatial operationsPolymorphism:

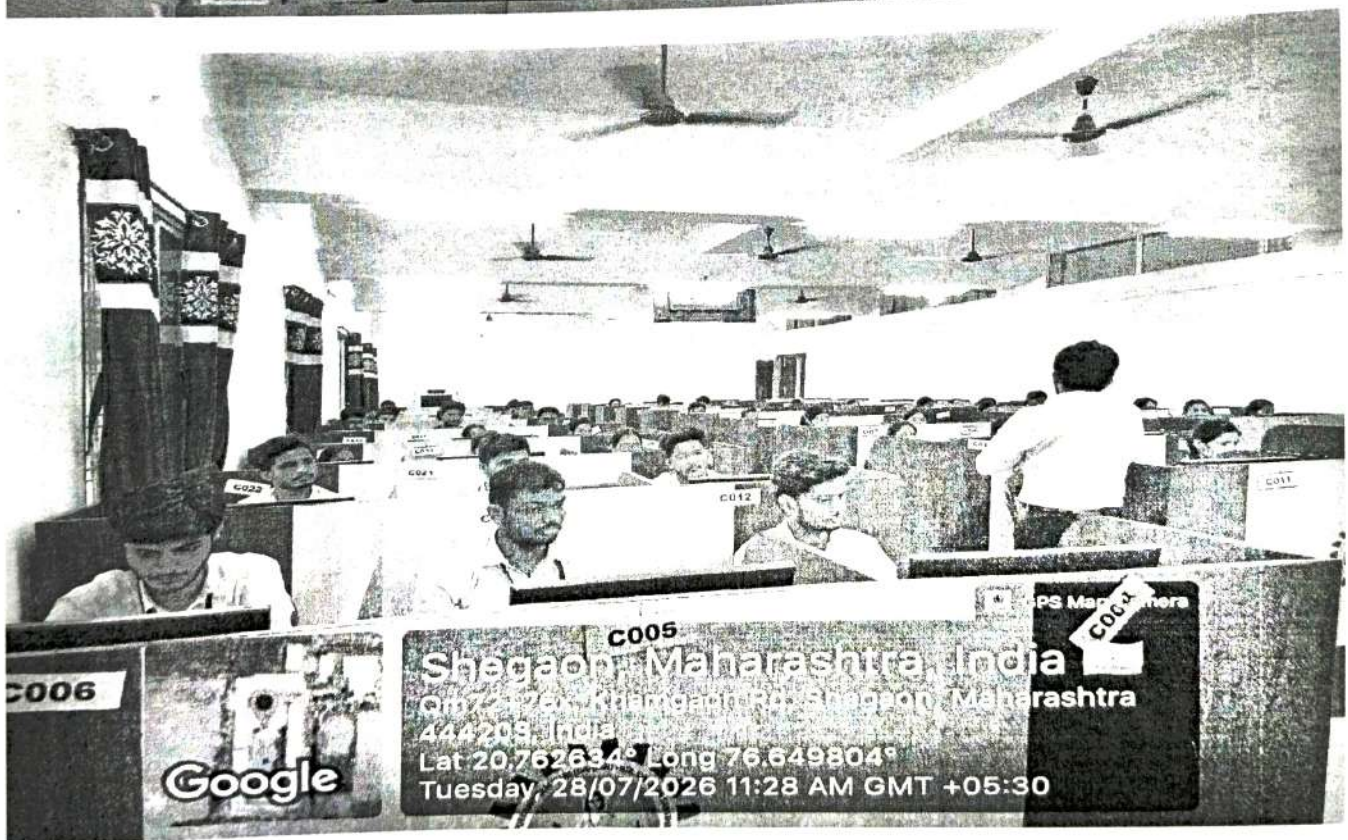
Day 6: Data Analytics: The Core Stack for Data Analytics

Data analytics focuses on transforming raw, unstructured, or tabular data into clean, structured formats to discover trends and drive decision-making.

- Pandas: The standard tool for data wrangling and analysis. It introduces Series (1D) and DataFrames (2D) to handle tabular data seamlessly. Pandas excels at filtering, merging datasets, handling missing values, aggregating metrics, and parsing various file formats (CSV, Excel, SQL). Understanding errors and exceptions.
- Polars / Dask: For massive datasets that exceed standard RAM capacities, tools like Polars (a high-performance, multithreaded DataFrame library written in Rust) and Dask (which scales NumPy, Pandas, and Scikit-learn workflows across clusters or multi-core systems) are utilized.

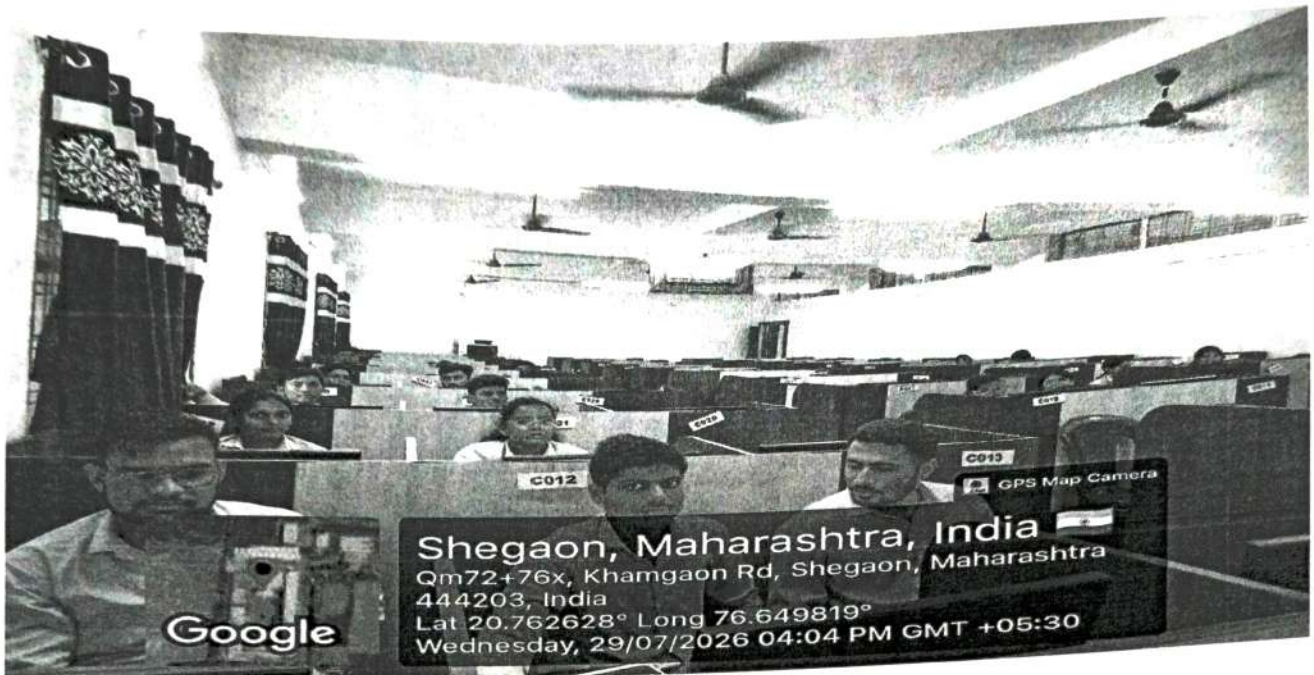


6 Days STTP Highlights





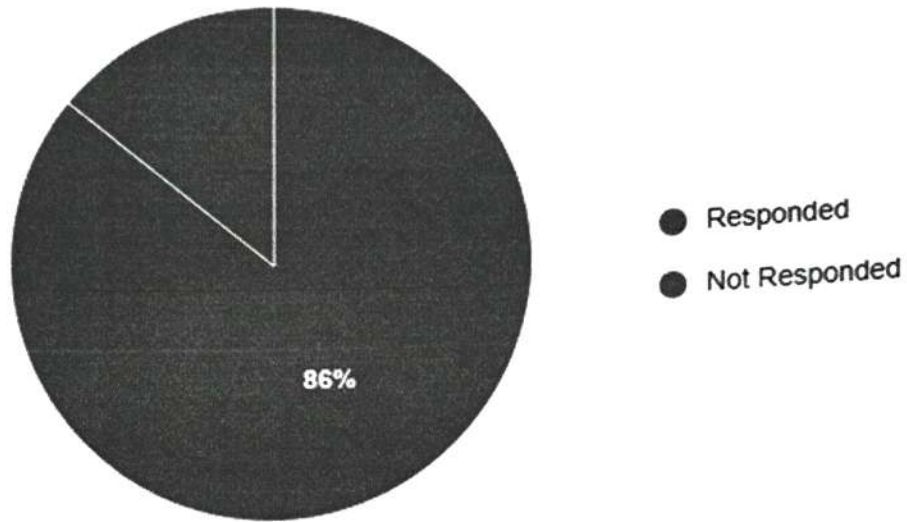
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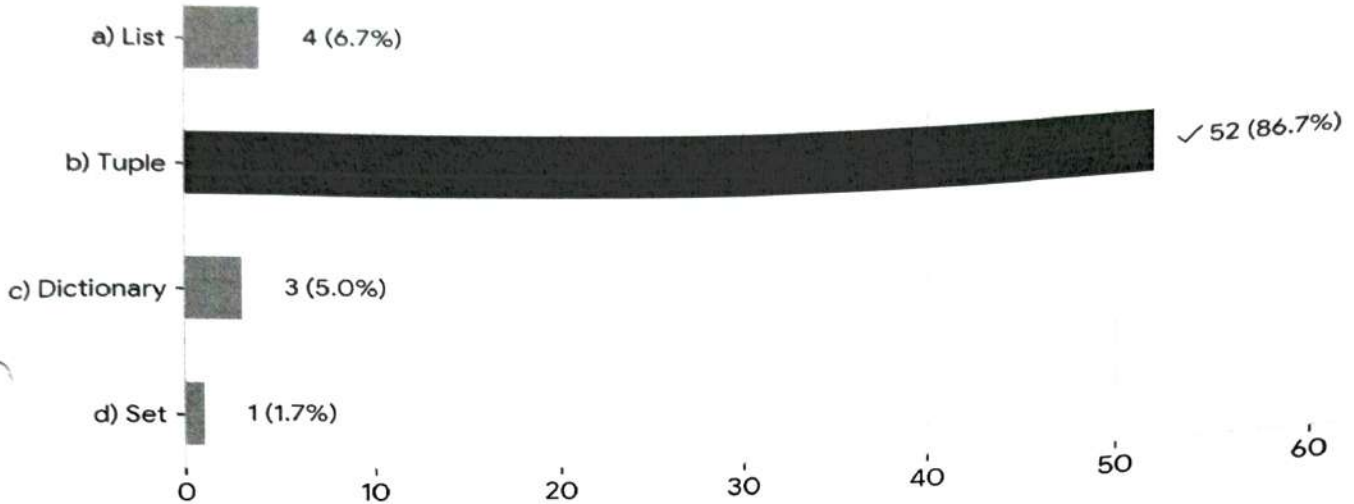
Quiz of Participant at the end of STTP

70 responses

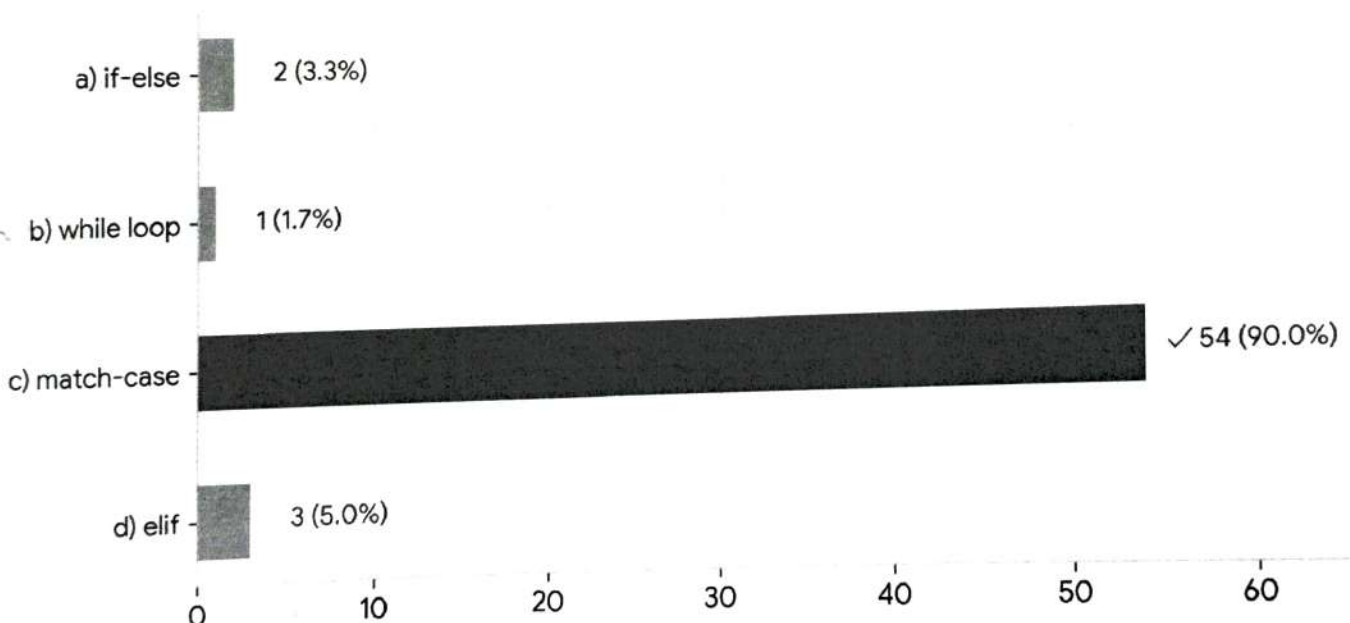




1. Which of the following data structures in Python is immutable?
60 / 60 responses

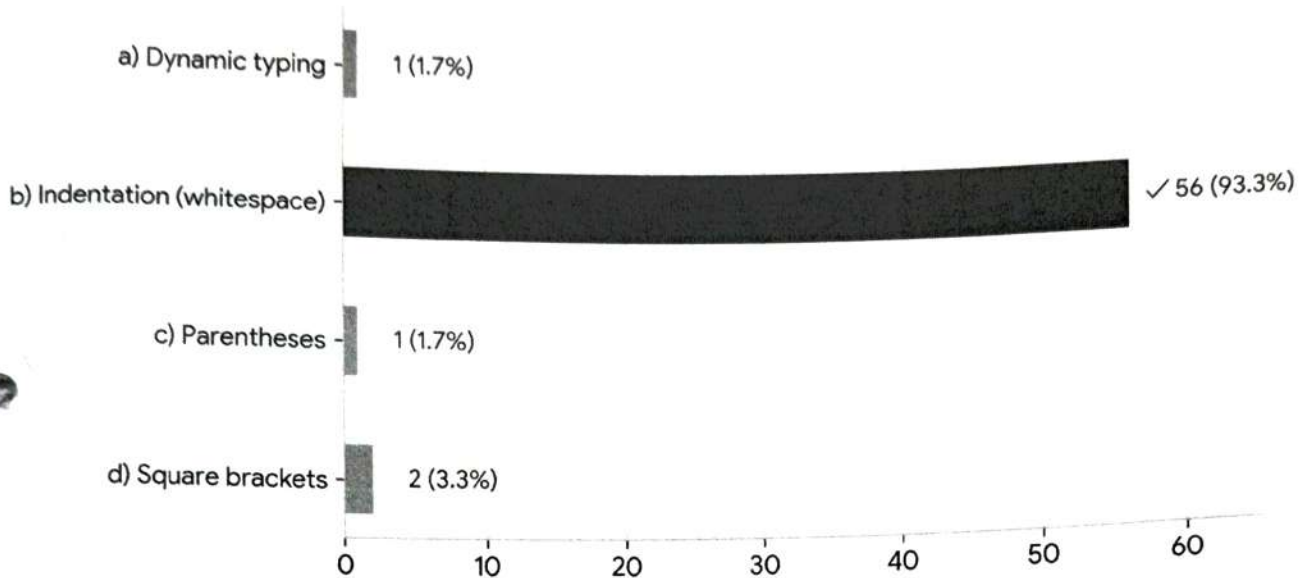


2. Which feature introduced in Python 3.10 acts as an advanced switch-case statement?
60 / 60 responses



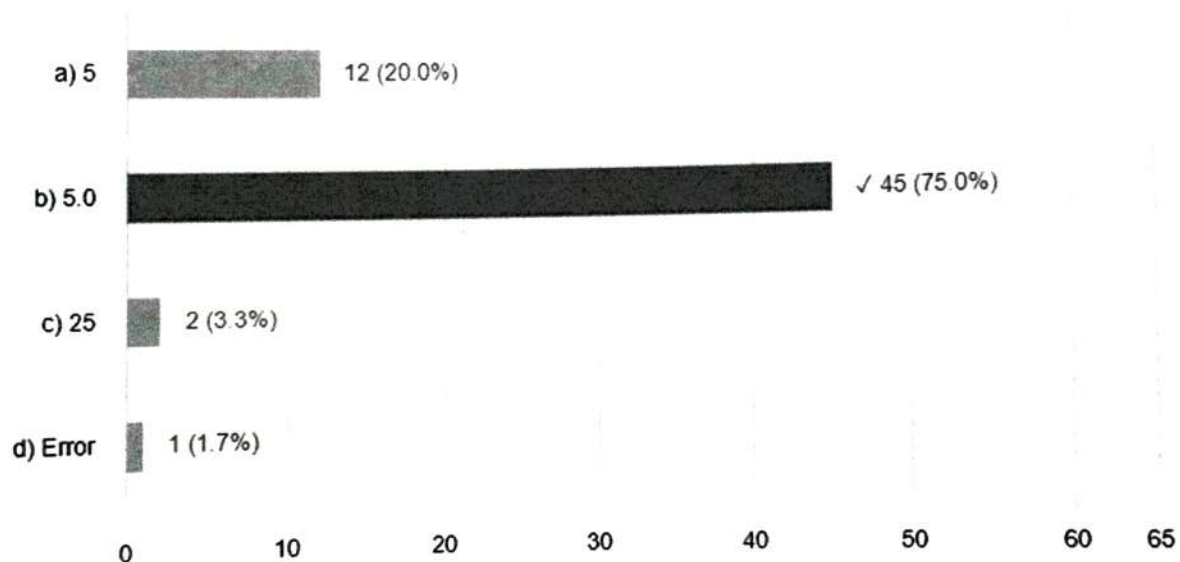


3. How does Python define code blocks instead of using semicolons or curly braces?
60 / 60 responses



4. What is the output of `math.sqrt(25)` in Python?

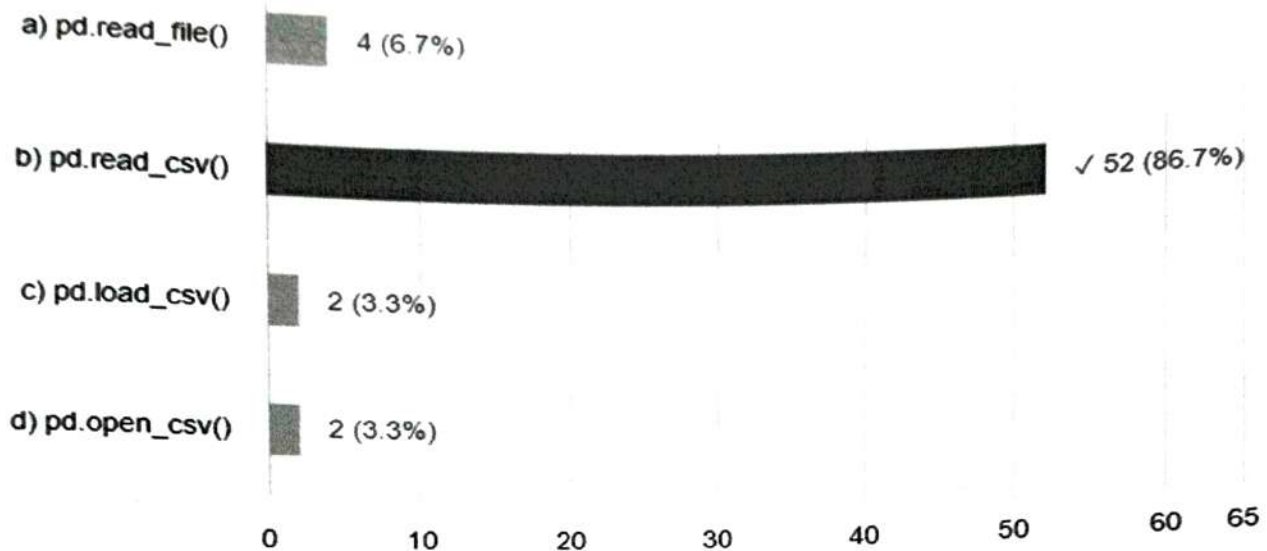
60 / 60 responses





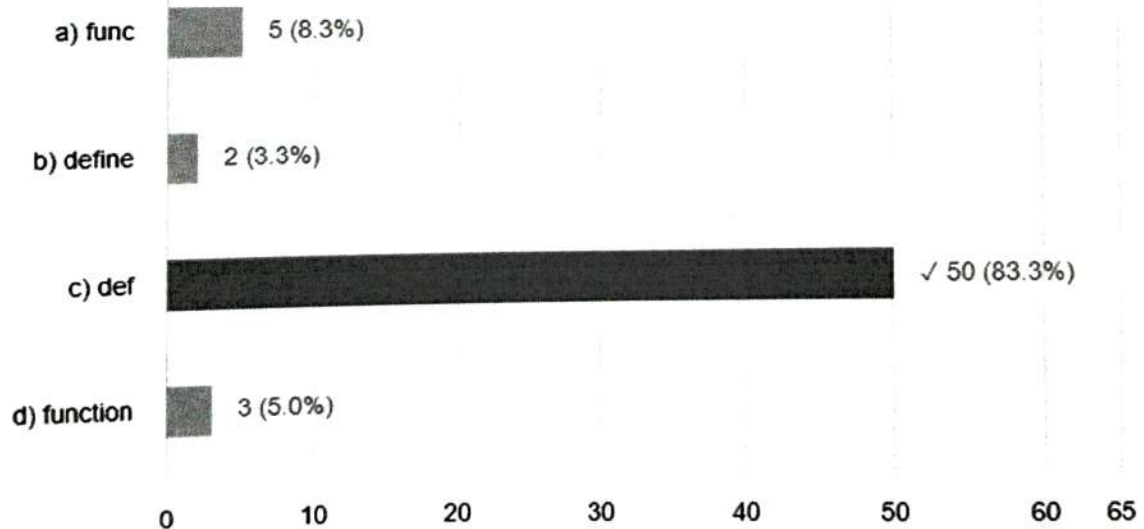
5. Which Pandas function is used to read a CSV file into a DataFrame?

60 / 60 responses



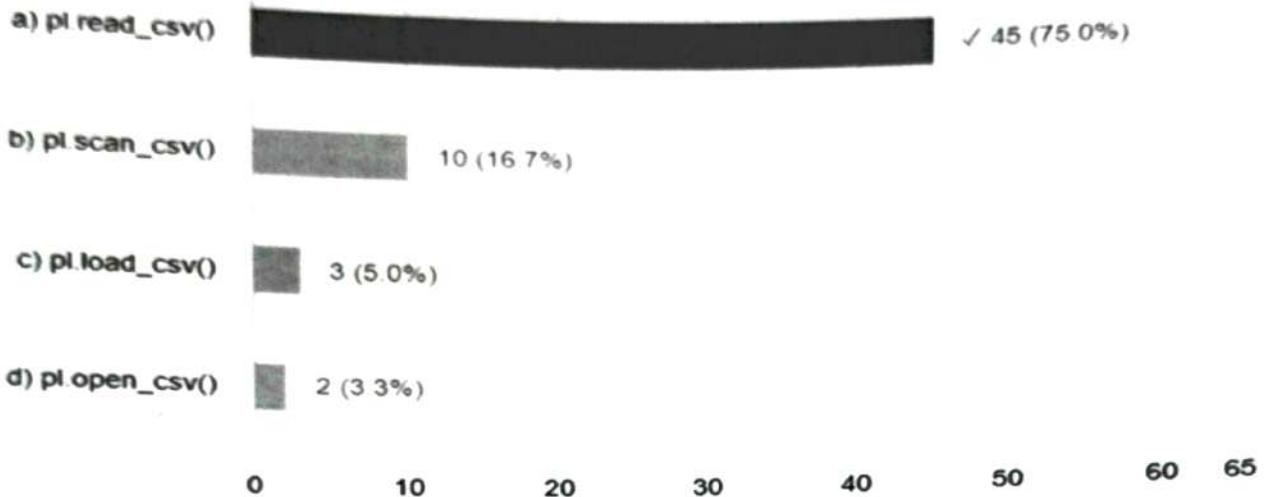
6. Which keyword is used to define a function in Python?

60 / 60 responses

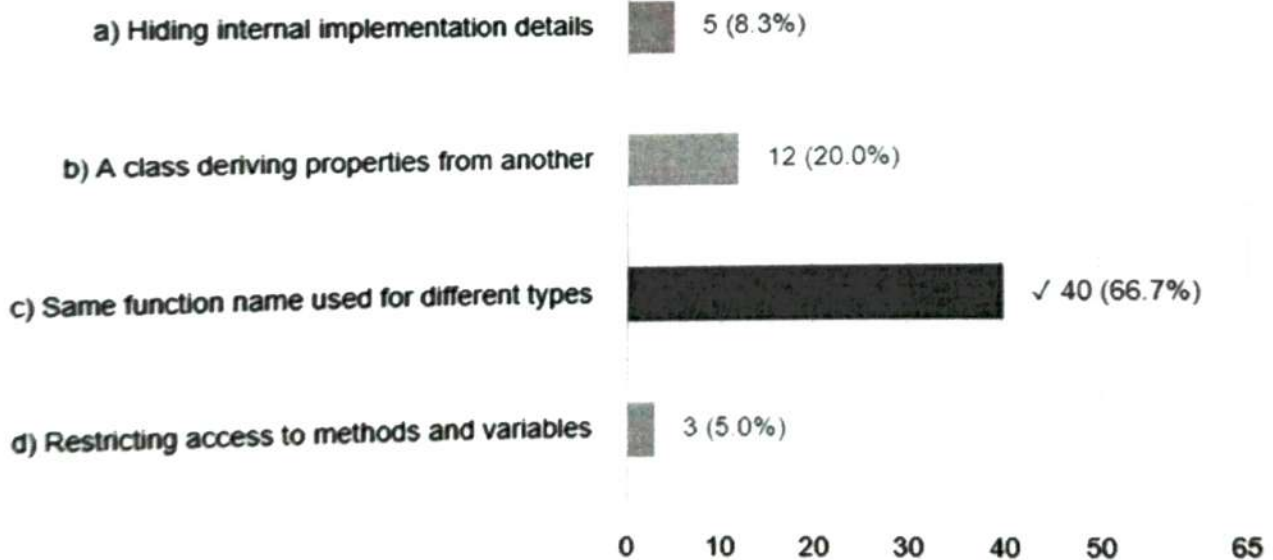




7. Which Polars function is commonly used to read a CSV file into a DataFrame?
60 / 60 responses



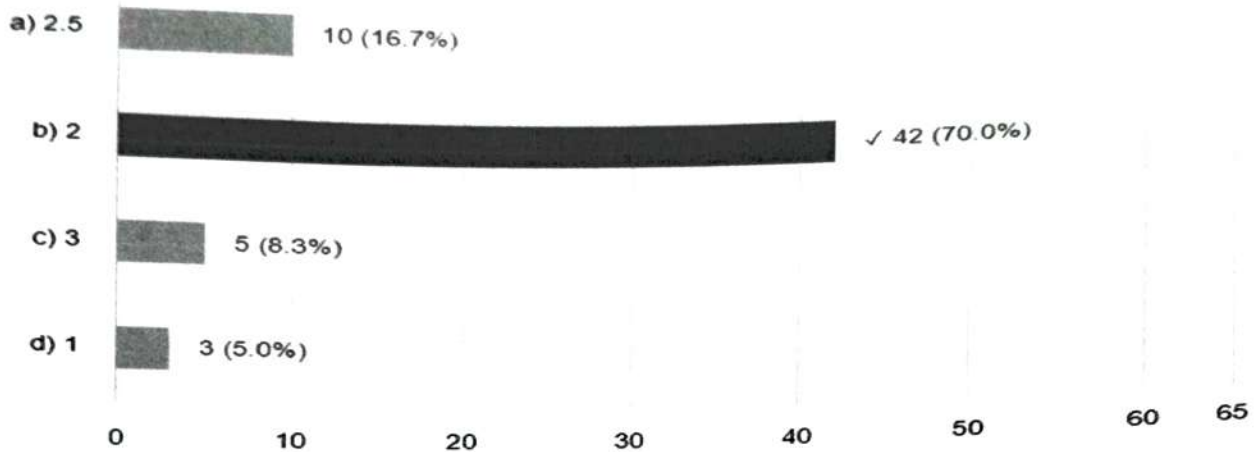
8. Which of the following best describes polymorphism in Python?
60 / 60 responses





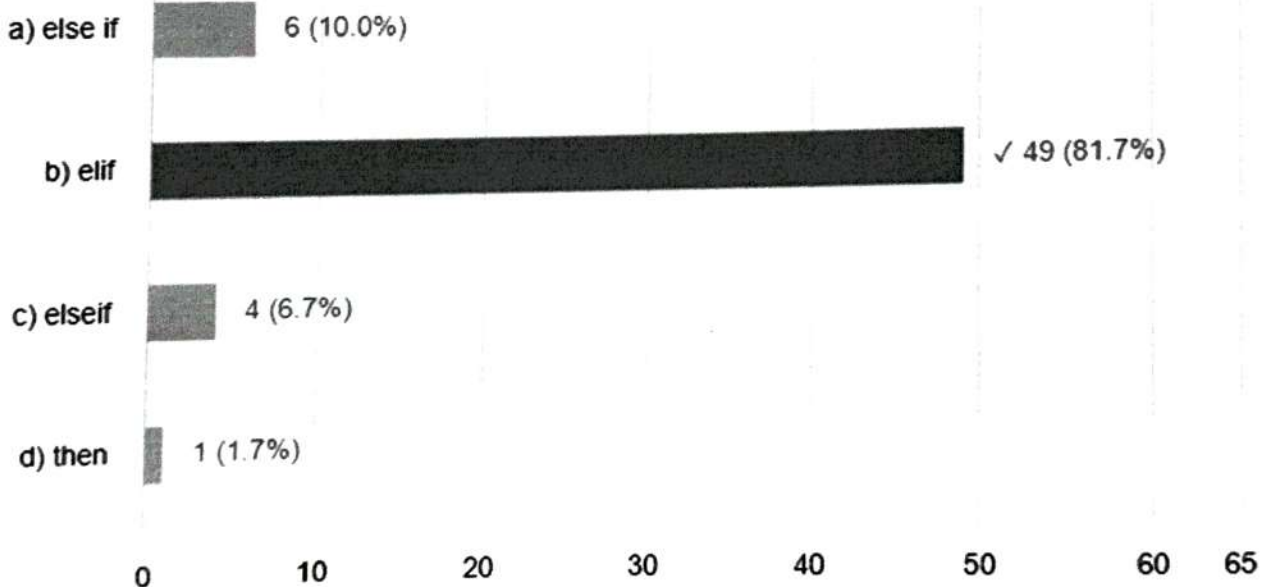
9. What is the output of the expression `5 // 2` in Python?

60 / 60 responses



10. Which keyword is used to test additional conditions in Python?

60 / 60 responses





Feedback and Suggestions

Participants expressed high satisfaction with the quality of the sessions and the depth of content covered. They appreciated the practical sessions, which allowed them to apply the theoretical knowledge gained during the lectures. The feedback indicated that the training program was a valuable learning experience and would be beneficial for future research and teaching initiatives.

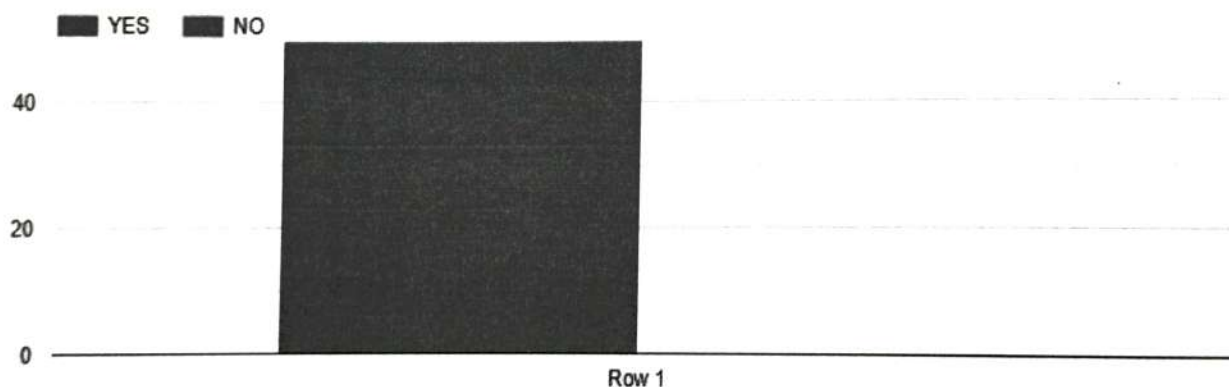
Suggestions for future programs included:

- Providing more time for practical hands-on work.
- Expanding the scope to cover more advanced topics like pandas, Numpy.

Feedback on STTP

1. Was the training easy to understand and follow

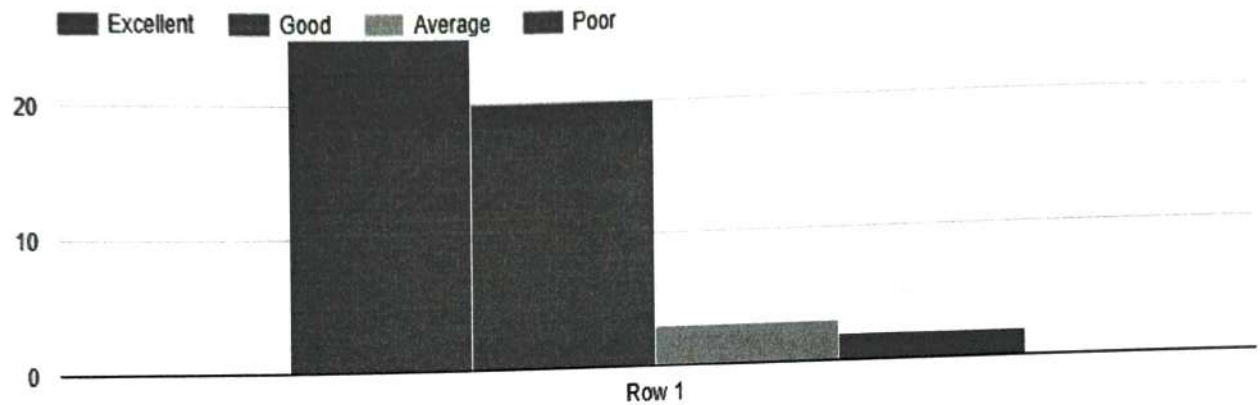
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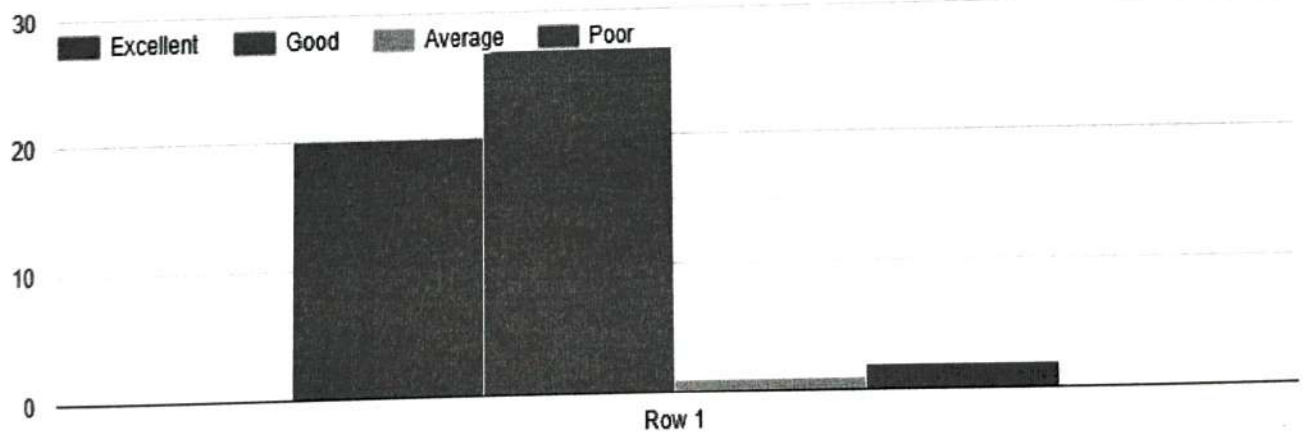
2.How would you rate the overall content of the STTP?

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3.How relevant was the content of the STTP?

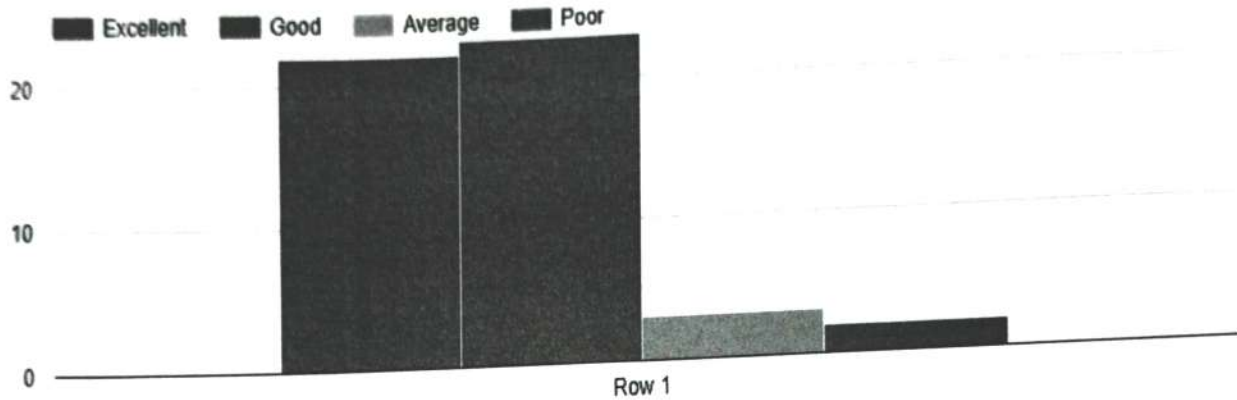
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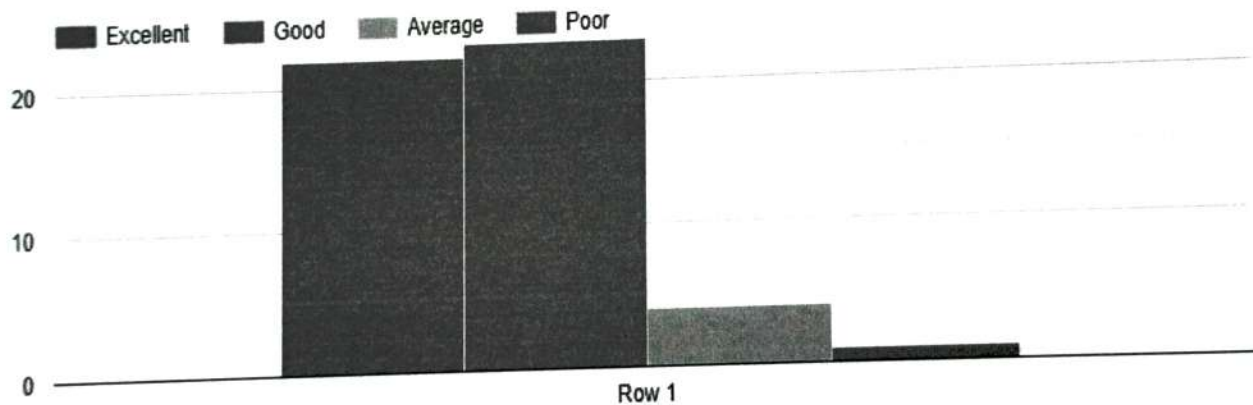
4. How Engaging and clear were the Instructors in their Explanations?

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5. Overall how you are Satisfied with the STTP?

Copy chart



6. Do you have any suggestions for improving the training?

Training is already very good
No
Nothing everything is fine
No suggestion
No Suggestions
It was overall good. No suggestions



Program Outcomes

By the end of the 6-days program, participants gained:

- Foundations of Python Programming
- Conditional Statements, Built-in Data Structure & Strings
- Modular Programming and Exception Handling
- Scientific Computing, Data Analytics

Prof. S. A. Yadgire
ISTE Coordinator

Dr. R. B. Ingle
ISTE Faculty Advisor

Dr. A. S. Manekar
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MGI-COET, Shegaon
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Indian Society for Technical Education

Shaheed Jeet Singh Marg, Near Katwaria Sarai, New Delhi – 110016

Name and Address of Host Institution

Name: M. G. OF INSTITUTION'S COLLEGE OF ENGG. & TECH

Email: rahul4ingle@gmail.com

Phone: 9730752607

Website: -

Address: KHAMGAON ROADSHEGAON-

City: DIST. BULDHANA

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Pincode: 444203

Incharge Details

First Name: Dr. S. R

Last Name: Paraskar

Email: principal@maulicoet.org

Phone: 9422920644

Designation: Professor

Program Details (HANDS-ON TRAINING ON PYTHON TO SOLVE COMPLEX PROBLEM)

Program intended for: Student and Teachers

Specialization Area: Computer Science

Course Type: Special course on Emerging areas

Proposal Category: Industry-based programmes with substantial involvement of industry and its experts

Program Duration: One week

Proposed Program Start Date: 2026-07-27

Proposed Program End Date: 2026-08-01

Having enough expertise within your institute and neighboring places: Yes

Course Coordinator Details

Field	Coordinator 1	Coordinator 2
Name	Swati Yadgire	Abhay Bharane
Email	swatiyadgire23@gmail.com	bharaneabhay23@gmail.com
Phone	9834467206	9689755835
Telephone	09970939431	09689755835
Address	KHAMGAON ROADSHEGAON-	KHAMGAON ROADSHEGAON-
Designation	Assistant Professor	Assistant Professor
Highest Qualification	M E	B.E
Area of Specialization	Computer Engineering	Computer Engineering
Teaching Experience	6	1
Industry Experience	-	-
Papers Published	15	1
Short-Term Course Attended	13	-
Short-Term Course Conducted	1	-

Course Details

Significance and Objectives: To Understand structural conventions of python, To Explore Advanced Libraries

Course Content/Coverage

Topic	Duration	Subject Expert
Python Control	10	Dr A S Manekar
Structures Strings	8	Dr A S Manekar
Modular Programming	8	Dr A S Manekar
OOP and File	8	Dr A S Manekar
Data Analytics	2	Dr A S Manekar

Course Schedule

Total Days	Lectures	Practicals	Visits	Others	Total Hours
6	8	24	2	1	35

Details of Equipment or Laboratory Facilities: Computer

Collaboration with Regulating Authority / Department

Expert Name	Organisation	Nature of Collaboration	Area of Expertise
Dr A S Manekar	MGICOET Shegaon	Teaching	Computer Engineering

Details of Course Faculty

Name	Designation	Institute	Highest Qualification	Specialization
Dr A S Manekar	Professor	MGICOET Shegaon	PhD	Computer Engineering

Audio Visuals and Mode of Course

Audio Visuals: Smart Classroom, LCD Projector

Mode of Course: Offline

Institute Membership and Chapter Details

IM Certificate Number: 2194

Chapter Certificate Number: MAH 204

Does your institution have an ISTE Faculty Chapter: Yes

Certified By Coordinator

Name: Dr Rahul Ingle

Place: SHEGAON

Date: 20 Jul 2026

Certified By Principal

Name: Dr S R Paraskar

Place: SHEGAON

Date: 20 Jul 2026