

Introduction to Programming

(DIT Part-I)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

GENERAL OBJECTIVES:

After completion of this course, students will be able to write a python script that uses:

- Variables to store different data type values.
- Arithmetic Operators to perform calculations.
- Conditional Statement (If, else, elif), Execute a block of code based on certain condition. What to run and what to skip.
- Loops (for and While) to execute a block of code again and again based on certain conditions.
- Type Casting to convert the variable as per requirements i.e., from number to string or string to number.
- Strings, to store characters, and work with it by using different built-in functions.
- Lists that organize different data types together as a container.
- Functions
- Turtle library to create basic shapes such as Square, Rectangle, Triangle and Stars.

Module	Course Contents	Allotted Weeks	Contact Hours
Python Programming Language			
01	Introduction to Programming 1.1. What is a program? 1.2. Languages of Programming a computer 1.2.1. Machine Language 1.2.2. Assembly Language 1.2.3. High Level Language 1.3. Algorithm 1.4. Compiler vs Interpreter 1.5. Introduction and Benefits of Python 1.6. History of Python 1.7. Exercise	02 Weeks	12
02	GETTING STARTED WITH PYTHON 2.1. Downloading and Installation of Python IDE (PyCharm) 2.2. Anatomy of Python Program 2.3. Write your first Hello World! Script 2.4. Guidelines for creating Script 2.4.1. Importance of comments 2.4.2. Spacing 2.5. Programming Errors: 2.5.1. Syntax Error 2.5.2. Runtime Errors 2.5.3. Logical Errors 2.6. Exercise	02 Weeks	12
03	VARIABLES & OPERATORS 3.1. Variables in Python 3.2. Rules and Guidelines for creating a variable 3.3. Assignment Operator 3.4. Multiple Assignments 3.5. Use of Built-in function (type) 3.6. Arithmetic Operators (+, -, /, *, **) 3.7. Type Conversion Vs Type Casting 3.8. Boolean Operator 3.9. Logical & Comparison Operators 3.10. Exercise	02 Weeks	12

04	STRINGS 4.1. Understanding Strings 4.2. Combine vs Repeat Strings 4.3. String's Built in Methods (capitalize (), len (), lower (), upper (), strip (), replace (), startwith(), endswith()) 4.4. Exercise	02 Weeks	12
05	LISTS 5.1. Understanding Lists 5.2. Forward vs Backward Accessing 5.3. Changing, Removing and Adding Element 5.4. Slice a List 5.5. Membership Operator: in vs not in	02 Weeks	12
	5.6. Exercise		
06	CONDITIONAL STATEMENT: 6.1. if statement 6.2. else statement 6.3. elif statement 6.4. Exercise	02 Weeks	12
07	LOOPS: 7.1. for loop 7.2. while loop 7.3. continue vs break 7.4. Exercise	02 Weeks	12
08	FUNCTIONS 8.1. Understanding functions 8.2. print vs return statement 8.3. Variable scope 8.4. Default arguments 8.5. Exercise	02 Weeks	12

09	WORKING WITH GRAPHICS	04 Weeks	24
	9.1. Introduction to Turtle 9.2. Basic commands (forward(), back(), left(), right()) 9.3. Draw Shapes (Lines, Square, Rectangle, Circle, Star) 9.4. Working with Excel File using Panda 9.4.1. Reading an Excel file using Python 9.4.2. Writing into an excel file using Python 9.5. Other Useful Python Libraries 9.5.1. Numpy 9.5.2. Matplotlib 9.5.3. Tkinter 9.5.4. Django 9.5.5. Kotlin 9.5.6. Micropython 9.5.7. PyGame Practical (25,26,27,28,29,30,31)		
Total		20	120

Lab Requirements (Hardware / Software)	Hardware Requirements: - CPU: Intel Core or Xeon 3GHz (or Dual Core 2GHz) or equal AMD CPU - RAM: 4 GB (6 GB recommended) - Display Resolution: 1280×1024 is recommended, 1024×768 is minimum. - Software Requirement: 64-bit versions of Microsoft Windows 11, 10, 8 - Install PyCharm Community
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List of Practical's

List of practical	1. Write a script to display "Hello World!! "On console.
	2. The electricity bills for the last three months have been 23000, 32000 and 64000. What is the average monthly electricity bill over the three-month period? Write an expression to calculate the mean, and use print() to view the result.
	3. Write a script to calculate the area of circle. (Area of Circle: $A = \pi r^2$).
	4. Write a script that Count all letters, digits, and special symbols from a given string. <code>inputString = "P@#yn26at^&i5ve"</code>
	5. Write a script to find all occurrences of "Baqir" in a given string ignoring the case. <code>inputString = "Baqir is student of python programming class. Baqir belongs to district peshawar"</code>

6. Write a script to split a given string on hyphens and display each substring.

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inputString = Bareera-is-a-data-scientist
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7. Write a script to check whether a number entered by user is even or odd.
8. Write a script to check whether a number is divisible by 7 or not.
9. Write a script to takes score from a user between (1 and 100) and display its grade according to score. (Score: 1-50 Grade: Average) (Score: 51-70 Grade: Good) (Score: 71-100 Grade: Excellent).
10. Write a script to print First 10 natural numbers using loop (while, for).
11. Write a script to print factorial of the given number (while, for).
12. Write a script to calculate the sum of all numbers from 1 to a given number (while, for).
13. Write a program to print multiplication table of a given number (while, for)
14. Write a script to print the list the reverse order.
15. Write a script that takes five fruits name from the user and store it in a list. Display the list elements using for loop.
16. Write a script to turn every item of a list into its square.
(numberList= [2,4,6,6,10])
17. Write a script that copy all the elements of the given list and append it to new list name updatedList.
list = ['Mango', 'Apple', 'Banana', 'Melon', 'Grapes']
18. You have been given a Python list. Write a script to find value 20 in the list, and if it is present, replace it with 200. list = [22,12,25,667,988,387,20,188,77]

	19. Write a script that takes an input string from a user and find that if the string exists or not in the given list. list = ['Pakistan', 'Shayan', 'Baqir', 'GCMS'] 20. Write a script that find all the elements in a list start with letter B. Names = ["Ali", "Shayan", "Baqir", "Bareera", "Zulfiqar"] 21. Write a Python function that accepts two numbers as arguments and returns the sum. 22. Write a Python function that accepts different values as parameters and returns a list. 23. Write a Python function that returns multiple values. 24. Write a Python function to find the factorial of a number. 25. Write a python script to draw star on screen. 26. Write a python script to display rectangle on screen 27. Write a python script to draw square on screen. 28. Write a python script to draw a circle on screen. 29. Write a python script to draw lines on screen.
Reference Material	• Introduction to Programming using Python by Y. Daniel Liang • Python For Dummies by Stef Maruch & Aahz Maruch  https://docs.python.org/3/tutorial/index.html