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**MCA (Science)**

**2024-25**

**MCA Semester II**

**Course Code: MCA 40070**

**Course Name: Python Programming**

**Lab Manual**

**LAB Credits 2**

**Assessment Schema Code : TL1**

**Lab Assessment Methodology**

**Class Continuous Assessment (CCA): 60 Marks**

Lab book: 20 marks

Lab Performance: 30 marks

Lab Participation: 10 Marks

**Term End Examination: 40 Marks**

**Total assessment: 100 Marks**

**ASSIGNMENTS ON**

**LAB COURSE – MCA 40070**

**Lab on Python Programming**

**MCA (Science): Semester II**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**PRN No.: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Division: \_\_\_\_\_\_\_\_\_\_**

Certificate

This is to certify that Mr./Ms.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ PRN No.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, a student of MCA CS, Semester II has successfully completed \_\_\_\_\_\_\_ no. of assignments in Lab Course on MCA 40070Lab on Python Programming during A.Y. 2024-25.

Subject Teacher Program Head

Dr. Swapna Saoji Dr. Jalindar Gandal

Program Director  
Dr. Anuradha Kanade

**INDEX**

**MCA Sem – II Lab on Python Programming**

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| **Sr. No.** | **Title of the Assignment** | **Page**  **No.** | **Start Date** | **End Date** | **Remarks with Scale of 5** | **Signature of the Instructor** |
| 1 | 1. Demonstrate about Fundamental Data types in Python Programming |  |  |  |  |  |
| 2 | Write a program to perform different arithmetic operations on numbers in python. |  |  |  |  |  |
| 3 | Write a program to create, concatenate and print a string and accessing sub-string from given string. |  |  |  |  |  |
| 4 | Write a Python program to Remove all duplicates from a given string in Python. |  |  |  |  |  |
| 5 | Using a for loop, write a program that prints the decimal equivalents of 1/2, 1/3, 1/4, ....... 1/10 |  |  |  |  |  |
| 6 | Write a program using a while loop that asks the user for a number and prints a countdown from that number to zero. |  |  |  |  |  |
| 7 | Create a menu driven Python program using user defined functions to implement a  calculator to perform:  (a) Basic arithmetic operations  (b) log10(x), sin(x), cos(x) |  |  |  |  |  |
| 8 | 1. Write a program which makes use of the function to display all such numbers which are divisible by 7 but are not a multiple of 5, between 1000 and 2000. |  |  |  |  |  |
| 9 | 1. Write a python program which contains user defined functions as a ‘module’ to calculate area, perimeter or surface area, volume for various shapes like square, cube, circle, cylinder. The user defined functions should accept the values for calculation as parameters and calculated values should be returned. Import the module and use appropriate functions. |  |  |  |  |  |
| 10 | 1. Demonstrate the following functions/methods which operates on lists in Python with suitable examples: len ( ) ,count( ) ,index ( ),append( ) ,insert( ) ,extend() ,remove( ), pop( ),reverse( ) ,copy( ) |  |  |  |  |  |
| 11 | Write a python program to read a list of ‘n’ integers (positive and negative) and create  two new lists one having all positive numbers and the other having all negative numbers from the given list. Print all three lists. |  |  |  |  |  |
| 12 | 1. Demonstrate the following functions/methods which operates on tuples in Python with suitable examples: len( ) ,count( ) ,index( ) ,sorted( ),min ( ), max( ) , cmp( ), reversed( ) |  |  |  |  |  |
| 13 | 1. Demonstrate the following functions/methods which operates on dictionary in Python with suitable examples: clear (), get ( ), pop( ), copy( ), pop( ) ,keys( ) , values() ,items() |  |  |  |  |  |
| 14 | 1. Create a Python program to create a dictionary which has a record of a student information: Admission number, Roll Number, Name and Marks. Display information on the basis of Admission number. |  |  |  |  |  |
| 15 | 1. Write a Python script to sort (ascending and descending) a dictionary by value. |  |  |  |  |  |
| 16 | Create a numpy array to demonstrate basic array characteristics and Apply basic operations +,-,\*,/ and find the transpose of matrix. |  |  |  |  |  |
| 17 | Write a Python program to visualize a dataset by displaying multiple types of charts using Matplotlib. |  |  |  |  |  |
| 18 | Write a Python program to load the iris data from a given csv file into a dataframe and print the shape of the data, type of the data and first 3 rows. |  |  |  |  |  |
| 19 | Write a python program to count NaN or missing values in Pandas DataFrame. |  |  |  |  |  |
| 20 | Write a NumPy program to convert Centigrade degrees into Fahrenheit degrees. Centigrade values are stored in a NumPy array |  |  |  |  |  |
| 21 | Demonstrate the following in-built functions to use Regular Expressions very easily in our applications. finditer( ) , match( ) , fullmatch( ),search( ) ,findall( ) , sub( ), split( ) |  |  |  |  |  |
| 22 | Write a Python program to create a person class. Include attributes like name, country and date of birth. Implement a method to determine the person’s age. |  |  |  |  |  |
| 23 | Write a python program to implement Multiple inheritance and Method overriding. |  |  |  |  |  |
| 24 | Write a python program to implement try, catch, finally |  |  |  |  |  |

Remarks (if any):

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Date of Completion of all Assignments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of the Instructor: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**INSTRUCTIONS**

**Practical Evaluation Format**

The internal continuous assessment will be of 50 marks and end semester lab examination will be of 50 marks.

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| Sr. No. | Distribution of Marks | Marks |
| 1 | Continuous Assessment:  After finishing every practical instructor should give the marks to the respective assignment and evaluate those marks at the end of the trimester. | 60 |
| 2 | End Trimester Examination:  Practical examination should be conducted by preparing slips which will contain 2 programs other than those which are covered in assignment book | 40 |

1. **About the assignment book**

This workbook is intended to be used by students for the laboratory course. In Computer science, hands-on laboratory experience is critical to the understanding of theoretical concepts studied in the theory courses. This assignment book covers numerous computing problems covering all difficulty levels. This book will describe the continuous assessment of the course.

1. **How to use this assignment book**

This assignment book is mandatory for the completion of the laboratory course. It is a measure of the performance of the student in the laboratory for the entire duration of the course.

1. **Instructions to the students**
2. Students are expected to carry this book every time they come to the lab for practical session
3. Students should solve assignments which are selected by instructor as a part of practical session. However, students are free to solve additional assignments to do more practice for their practical examination.

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| **Exercise** | **Difficult Level** |
| Set A | Easy & Medium |
| Set B | Hard |

1. Student will be assessed for each assignment on a scale of 5

**Instruction to the Instructors**

1. After a student completes a specific assignment, the instructor has to verify the outputs and sign in the provided space after the activity
2. Ensure that the students use good programming practices
3. Instructor should evaluate each assignment carried out by a student on a scale of 5