



MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AN AUTONOMOUS INSTITUTION)

(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)

Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section 2(f) & 12(B) of the UGC act, 1956

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING 2030575 PYTHON PROGRAMMING LAB

B.Tech.II Year-I Sem

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VISION

To empower the students to be technologically adept, innovative, self-motivated and responsible global citizen possessing human values and contribute significantly towards high quality technical education with ever changing world.

MISSION

M1	To offer high-quality education in the computing fields by providing an environment where the knowledge is gained and applied to participate in research, for both students and faculty.
M2	To develop the problem solving skills in the students to be ready to deal with cutting edge technologies of the industry.
M3	To make the students and faculty excel in their professional fields by inculcating the communication skills, leadership skills, team building skills with the organization of various co-curricular and extra-curricular programmes.
M4	To provide the students with theoretical and applied knowledge, and adopt an education approach that promotes lifelong learning and ethical growth.

LIST OF EXPERIMENTS

Exercise 1 –Python Numbers

a) Write a program to determine whether a given year is a leap year, using the following Formula: a leap year is one that is divisible by four, but not by one hundred, unless it is also divisible by four hundred. For example, 1992, 1996, and 2000 are leap years, but 1967 and 1900 are not. The next leap year falling on a century is 2400.

b) Write a program to determine the greatest common divisor and least common multiple of a pair of integers.

c) Create a calculator application. Write code that will take two numbers and an operator in the format: N1 OP N2, where N1 and N2 are floating point or integer values, and OP is one of the following: +, -, *, /, %, **, representing addition, subtraction, multiplication, division, modulus/remainder, and exponentiation, respectively, and displays the result of carrying out that operation on the input operands.

Hint: You may use the string split() method, but you cannot use the eval () built-in function.



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Exercise -2 Control Flow

- Write a Program for checking whether the given number is a prime number or not.
- Write a program to print Fibonacci series up to given n value.
- Write a program to calculate factorial of given integer number.

Exercise 3 Control Flow -Continued

- Write a program to calculate value of the following series $1+x-x^2+x^3-x^4+ \dots -x^n$.
- Write a program to print Pascal triangle.

Exercise 4 – Python Sequences

- Write a program to sort the numbers in ascending order and strings in reverse alphabetical order.

Given an integer value, return a string with the equivalent English text of each digit. For example, an input of 89 results in "eight-nine" being returned. Write a program to implement it.

Exercise 5– Python Sequences

- Write a program to create a function that will return another string similar to the input string, but with its case inverted. For example, input of "Mr. Ed" will result in "mR.eD" as the output string.
- Write a program to take a string and append a backward copy of that string, making a palindrome.

Exercise 6– Python Dictionaries

- Write a program to create a dictionary and display its keys alphabetically.
- Write a program to take a dictionary as input and return one as output, but the values are now the keys and vice versa.

Exercise - 7 Files

- Write a program to compare two text files. If they are different, give the line and column numbers in the files where the first difference occurs.
- Write a program to compute the number of characters, words and lines in a file.

Exercise - 8 Functions

- Write a function ball collide that takes two balls as parameters and computes if they are colliding. Your function should return a Boolean representing whether or not the balls are colliding.

Hint: Represent a ball on a plane as a tuple of (x, y, r), r being the radius

- If (distance between two balls centers) \leq (sum of their radii) then (they are colliding)
- Find mean, median, mode for the given set of numbers in a list.



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d) Write simple functions `max2()` and `min2()` that take two items and return the larger and smaller item, respectively. They should work on arbitrary Python objects. For example, `max2(4, 8)` and `min2(4, 8)` would each return 8 and 4, respectively.

Exercise - 9 Functions - Continued

a) Write a function `nearly equal` to test whether two strings are nearly equal. Two strings `a` and `b` are nearly equal when `a` can be generated by a single mutation on `b`.

b) Write a function `dups` to find all duplicates in the list.

c) Write a function `unique` to find all the unique elements of a list.

Exercise - 10 - Functions - Problem Solving

a) Write a function `cumulative_product` to compute cumulative product of a list of numbers.

b) Write a function `reverse` to reverse a list. Without using the `reverse` function.

c) Write function to compute GCD, LCM of two numbers. Each function shouldn't exceed one line.

Exercise - 11 GUI, Graphics

a) Write a GUI for an Expresso Calculator using `tk`

b) Write a program to implement the following figures using `turtle`

COURSE OUTCOMES

CO Course Outcome

C218.1 Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.

C218.2 Demonstrate proficiency in handling Strings and File Systems.

C218.3 Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and develop programs using Graphical user interface .

C218.4 Handle Strings and Files in Python.

C218.5 Understand Multithread programming in Python.



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PROGRAM EDUCATIONAL OBJECTIVES

PEO1	To induce strong foundation in mathematical and core concepts, which enable them to participate in research, in the field of computer science.
PEO2	To be able to become the part of application development and problem solving by learning the computer programming methods, of the industry and related domains.
PEO3	To gain the multidisciplinary knowledge by understanding the scope of association of computer science engineering discipline with other engineering disciplines.
PEO4	To improve the communication skills, soft skills, organizing skills which build the professional qualities, there by understanding the social responsibilities and ethical attitude.

PROGRAM SPECIFIC OUTCOMES

PSO1- APPLICATIONS OF COMPUTING:

Ability to use knowledge in various domains to provide solution to new ideas and innovations.

PSO2- PROGRAMMING SKILLS:

Identify required data structures, design suitable algorithms, develop and maintain software for real world problems.

PSO3-EXECUTIVE SKILLS:

Make use of computational and experimental tools for creating innovative career paths, to be an entrepreneur and desire for higher studies.

Do's & Don'ts

- Switch off the power and unplug equipment before performing service.
- Know where the fire extinguisher is located and how to use it.
- Report fires or accidents to your lecturer/laboratory technician immediately.
- Avoid food and drinks from your workspace.
- Systems operate under normal room temperature.
- Computer lab room's floor should be clean, dry and dust free.
- No one is allowed to delete information from the computer.
- Enter the computer lab quietly and work quietly.
- Do not change computer settings or backgrounds.
- Don't plug in external devices without scanning for computer viruses.
- SAVE all unfinished work to a cloud drive or jump drive.