Vasavi College of Engineering (A), Hyderabad-31

Department of Information Technology

III SEMESTER – (2024-25)

Common for ECE, EEE, Mech, Civil

Assignment – I

SET – I

1. Discuss the features of Python Programming.
2. Explain the different Selection/Conditional Branching statements, using Python programs.
3. Discuss the different types of arguments to functions in Python, using programs.
4. Write a Python program that accepts 5 numbers as input, and displays the greatest of them, using 'if' statement.
5. a) Write a Python program that passes a lambda function as an argument to another function to compute the cube of a number.
   b) Write a Python program with a recursive function that accepts a number(>=4 digits) and calculates and returns the reverse of the number.
6. Write a Python program to match a string that contains only upper and lowercase letters, numbers, and underscores.

SET – 2

1. Discuss the Arithmetic, Comparison and Assignment Operators in Python, using examples.
2. Differentiate between condition-controlled and counter-controlled loops in Python, using programs.
3. Explain the concept of Anonymous functions in Python, using programs.
4. Write a Python program that counts the number of lowercase characters, uppercase characters, digits and special characters in a text accepted as input from the user.
5. a) Write a program to compute F(n, r) , where F(n, r) can be recursively defined as:

   $$F(n, r) = F(n-1, r) + F(n-1, r-1)$$

   b) Write a Python program with a function to print the Fibonacci series up to 'n'.
6. Write a Python program to search a literals string in a string and also find the location within the original string where the pattern occurs
   Sample text : 'The quick brown fox jumps over the lazy dog.' Searched words : 'fox'

SET – 3

1. Discuss the Logical, Unary, Bitwise, Membership and Identity Operators in Python, using examples.
2. Discuss the different loop structures/iterative statements in Python, using programs.
3. Explain the concept of Recursive Functions in Python, using a program.
4. Write a program to find the sum of the series $(1^1 / 1) + (2^2 / 2) + (3^3 / 3) + ...+ (n^n / n)$.
5. a) Write a menu driven program using functions to perform the operations addition, subtraction, multiplication, division, modulus and floor division.
   b) Write a function in Python that accepts a number 'n' as input and returns the average of the numbers from 1 to n.
6. Write a Python program to replace whitespaces with an underscore and vice versa.

SET – 4

1. Discuss different datatypes in python.
2. Explain the purpose of using break, continue, pass and else statements with loops in Python, using programs.
3. Compare Iteration with Recursion, using Python programs.
4. Write a program to find the sum of the series $(1^2 / 1) + (2^2 / 2) + (3^2 / 3) + ...+ (n^2 / n)$.
5. a) Write a Python program that uses a function (C(n,r)) to calculate the compound interest for the given principal, rate of interest and number of years.
   b) Write a Python program with a recursive function that prints the reverse of a given string.
6. Write a Python program to extract year, month and date from an url.

SET – 5

1. Explain the operations on Strings, using Python programs.
2. Explain using a Python program, how a program written using 'nested if' statements can be simplified 'if-elif-else'.
3. Define a function. Explain some pre-defined string functions of Python, using a program.

4. Write a Python program to print Pascal's triangle up to 'n' rows.
5. a) Write a Python program with a function to calculate x to the power of y, where y can be either positive or negative.
   b) Write a Python program that uses a function to calculate the hypotenuse of a right-angled triangle.
6. Write a Python program to convert a date of yyyy-mm-dd format to dd-mm-yyyy format.

SET – 6

1. Explain the significance of escape sequences, using appropriate examples.
2. Explain the concept of using nested loops in Python, using a program.
3. Explain how functions are used in Python programs, using a program.
4. Write a Python program that prompts the user to enter a string. The program should calculate and display the length of the string. The program should continue until the user enters 'QUIT'.
5. a) Write a program to compute F(M, N) , where F(M, N) can be recursively defined as: F(M,N) = 1 if M = 0 or $M \geq N \geq 1$, and, F(M, N) = F(M-1, N) + F(M-1, N-1), otherwise.
   b) Write a Python program with a function is_leap_year which takes the year as its argument and checks whether the year is a leap year or not, and then, displays an appropriate message.
6. Write a Python program to find the occurrence and position of the substrings within a string.

Note: Submit the assignment by 27-09-2024. Please follow the sets and the Roll nos. given below.

SET 1: Roll Nos. 23-732-008, 059, 734-029, 734-317, 307, 735-122,138,320,736-042,302.

SET 2: Roll Nos. 23-732-012, 301, 734-033, 735-009, 080, 735-123,150,736-008,046,304.

SET 3: Roll Nos. 23-732-015, 309, 734-044, 735-021,084,735-124,151,736-021,048,314.

SET 4: Roll Nos. 23-732-030, 313, 734-307, 735-022,102,735-313,152,736-036,049,050.

SET 5: Roll Nos. 23-732-040, 734-001, 734-311, 735-027,114,314,155,736-037,051.

SET 6: Roll Nos. 23-732-052, 734-014, 734-314, 735-306,116,113,182,736-038,054.