

DIPLOMA OF COMPUTER APPLICATION (2nd Semester)

ASSIGNMENTS



**Centre for Distance and Online Education
Guru Jambheshwar University of Science
& Technology, Hisar – 125001
(2026-2027)**

**CENTRE FOR DISTANCE AND ONLINE EDUCATION (CDOE)
GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR**

**Course: Data Structures and Algorithms
Code: DCA-21-T**

**Semester: 2nd
Maximum Marks: 30**

Important Instructions

1. Attempt all questions from each assignment given below.
2. Each assignment carries 15 marks.
3. All questions are to be attempted in legible handwriting on plane white A-4 size paper and upload the scanned copy of the assignments on student's portal.

ASSIGNMENT-I

1. Define linked list and also specify the memory representation for linked list in the computer.
2. What is stack. Write an algorithm/function to convert an expression from infix to postfix using stack with example.
3. Consider the following data and construct a binary tree using in-order and pre-order traversal.

In-order traversal – 9, 8, 4, 2, 10, 5, 10, 1, 6, 3, 13, 12, 7

Pre-order traversal – 1, 2, 4, 8, 9, 5, 10, 10, 3, 6, 7, 12, 13

ASSIGNMENT-II

1. Explain heap in detail and also write an algorithm/function to construct a heap with an example.
2. Define Warshall's algorithms with example.
3. What internal and external sorting techniques? Write an algorithm/function for bubble sort technique.

Dr Kapila Devi
Assistant Prof. (CS)
CDOE, GJUST, Hisar

**CENTRE FOR DISTANCE AND ONLINE EDUCATION
GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR**

Paper: Data Analytics
Paper Code: DCA-22-T

Semester: 2nd
Max. Marks – 30

Note: Important Instructions for submission of Online-Assignments.

- Attempt **all questions** from the following both assignments. Each question carries equal marks.
- **Typed and Xerox Copies of Assignments will not be accepted in any case.**
- All questions are to be attempted in **legible handwriting and written** on plane white A-4 size paper along with front page. Each page must carry your **Enrolment Number**.
- The student needs to scan all pages of handwritten assignment in **PDF format** size, of maximum **data 10 MB** per assignment.
- The student needs to upload assignments on **students' portal**. Read **“How to upload online Assignments”** and check the Instructions for online submission of Assignments.

ASSIGNMENT-1

- Q1. What are the different objects in R. Provide examples of how each object is implemented in R.
- Q2. Explain ten statistical functions. How would you compute and interpret statistical summaries in R? Explore any ten statistical functions with example in R.
- Q3. What are the different types of plots used for visualizing data? Explain how to create and interpret a scatter plot and a box plot using R?

ASSIGNMENT-2

- Q1. Explain the process of simple linear regression modeling. How would you estimate the coefficients and assess the accuracy of your model in R?
- Q2. Explain the process of classification modeling. Describe decision trees classification algorithm?
- Q3. Discuss how you would evaluate the accuracy of a classification model using metrics such as confusion matrix, sensitivity, specificity, and ROC curve.

Prepared By:
Dr Kapila Devi
Assistant Professor (CS)
CDOE, GJUST, Hisar

**CENTRE FOR DISTANCE AND ONLINE EDUCATION (CDOE)
GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR**

Course: Database Management System
Paper Code: DCA-23-T

Semester: 2nd
Max. Marks=30

Important Instructions

- Attempt all questions from each assignment given below.
- Each assignment carries 15 marks.
- All questions are to be attempted in legible handwriting on plane white A-4 size paper.

ASSIGNMENT-I

- Q1. Explain the Database Approach and discuss its major advantages over traditional file-processing systems.
- Q2. Explain the E-R Model with suitable examples of entity types, attributes, keys, and relationships.
- Q3. Explain the basic operations of Relational Algebra and illustrate any three operations with suitable examples.

ASSIGNMENT-II

- Q1. What is normalization? Explain 1NF, 2NF, and 3NF with suitable examples.
- Q2. Explain Functional Dependency and discuss its importance in relational database design and normalization.
- Q3. Explain the ACID properties of a transaction. How do locking techniques help in concurrency control?

Dr Kapila Devi
Assistant Prof. (CS)
CDOE, GJUST, Hisar

**CENTRE FOR DISTANCE AND ONLINE EDUCATION (CDOE)
GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY,
HISAR**

Course Name: Python Programming
Paper Code: DCA-24-T

Semester: 2nd
Max. Marks: 30

Important Instructions:

- 1) Attempt all questions from each assignment given below.
- 2) Each assignment carries 15 marks.
- 3) All questions are to be attempted in legible handwriting on plane white A-4 size paper and same is uploaded through login your account.

ASSIGNMENT-I

- Q1. What are identifiers in Python? State the rules for naming identifiers.
- Q2. What are the different types of operators in Python? Write expressions using each type of operator and explain the output.
- Q3. Explain the syntax and working of the while loop in Python. Write a Python program using a while loop to print the first 10 natural numbers.

ASSIGNMENT-2

- Q1. What is inheritance? Write a program that demonstrates inheritance in Python.
- Q2. Write SQL queries for Create, Insert, Select, Update, and Delete operations and explain how to execute them in Python.
- Q3. Explain with functions like plot(), bar(), pie(), hist(), xlabel(), ylabel(), title(), and legend().

Prepared By:
Dr. Neeraj Verma
Assistant Professor (CS)
GJUS&T, Hisar

**CENTRE FOR DISTANCE AND ONLINE EDUCATION
GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR**

Course Name: Communication Skills and Personality Development
Paper Code: DCA-25-T

Semester: 1st
Max. Marks: 30

Important Instructions:

- 1) Attempt all questions from each assignment given below.
- 2) Each assignment carries 15 marks.
- 3) All questions are to be attempted in legible handwriting on plane white A-4 size paper and same is uploaded through login your account.

ASSIGNMENT - 1

1. What is personality? Explain its main elements. (5 Marks)
2. What is personal grooming? Explain the importance of personal hygiene. (5 Marks)
3. What is body language? Explain any five types of body language. (5 Marks)

ASSIGNMENT - 2

1. Differentiate between oral and written communication. (5 Marks)
2. What is a group discussion? Write any five Do's and Don'ts of group discussion. (5 Marks)
3. What is a resume? Explain the importance of resume writing for a job interview. (5 Marks)

Prepared By:
Mr ASHOK KUMARR
Assistant Professor (Mass
Communication)
CDOE, GJUS&T, Hisar

CENTRE FOR DISTANCE AND ONLINE EDUCATION
GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY,
HISAR

Course Name: DBMS Lab.
Code: DCA-26-P

Semester: 2nd
Max. Marks: 30

Important Instructions

1. Attempt these experiments/assignments.
2. All assignments are to be completed either in legible handwriting on plain white A4-size paper or typed in a Word file, along with appropriate screenshots of the output of the respective assignments. Practical file must be uploaded on the LMS portal.

List of experiments/assignments:

1. Use oracle software and login with valid userid and password. Explore its GUI and practice some basic command of it.
2. Three assignments related to creation of database with tables having different fields and data types.
3. Two assignments on the creation of table with different types of constraints.
4. Two assignments on insert, delete and modify records from the tables.
5. Two assignments on modifying the table using the alter command.
6. Two assignments on exploring select statement using various clauses like where, order by, group by, having and aggregate functions.
7. Two assignments on the use of set operations to query the tables.
8. Two assignments on creating joins and views on the tables.
9. One assignment on generating sub-queries.

Prepared By:

Dr. Ritu
Assistant Professor (CS)
CDOE, GJUS&T, Hisar

CENTRE FOR DISTANCE AND ONLINE EDUCATION
GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY,
HISAR

Course Name: Python Programming Lab.
Code: DCA-27

Semester: 2nd
Max. Marks: 30

Important Instructions

1. Attempt any **Eight** experiments/assignments.
2. All assignments are to be completed either in legible handwriting on plain white A4-size paper or typed in a Word file, along with appropriate screenshots of the output of the respective assignments. Practical file must be uploaded on the LMS portal.

List of experiments/assignments:

1. Install Python and explore various popular IDE like IDLE, PyCharm, and Anaconda.
2. Assignments to perform various number operations like
 - a. Find maximum from a list of numbers
 - b. GCD of two number
 - c. Square root of a number
 - d. Check number is prime or not.
 - e. Print first N prime numbers
 - f. Remove duplicate numbers from list
 - g. Print the Fibonacci series.
3. Assignments to perform various operations on Strings like creation, deletion, concatenation.
4. Create a List L = [10, 20, 30]. Write programs to perform following operations:
 - a. Insert new numbers to list L.
 - b. Delete numbers from list L.
 - c. Sum all numbers in list L.
 - d. Sum all prime numbers in list L.
 - e. Delete the list L.
5. Create a Dictionary D= {'Name': 'Rakesh', 'Age': 27, 5:123456}.
Write programs to perform following operations:

- a. Insert new entry in D.
 - b. Delete an entry from D.
 - c. Check whether a key present in D.
 - d. Update the value of a key.
 - e. Clear dictionary D.
6. Two assignments on Sets to perform various operation like union, intersection, difference etc.
 7. Two assignments related to searching operation like linear search, binary search.
 8. Three assignments related to sorting like selection sort, bubble sort, insertion sort.
 9. Demonstrate the use of dictionary for measuring student marks in five subjects and find the student having maximum and minimum average marks.
 10. Two assignments on usage of different available packages like random package toper form
 - a. Print N random numbers ranging from 100 to 500.
 - b. Print 10 random strings whose length between 3 and 5.
 11. Two assignments on usage of package such as NumPy, Pandas.
 12. Implement and demonstrate the functions of a simple calculator.
 13. One assignment on implementing object-oriented concept such as classes, inheritance, and polymorphism.
 14. One assignment on file handling that how data is read and written to a file.