

CERTIFICATE IN MOBILE APPLICATION DEVELOPMENT (CMAD)

Assignments

(January, 2024 & July, 2024 sessions)

BCS-091, BCS-092, BCS-093, BCS-094, BCSL-091

Assignments



**SCHOOL OF COMPUTER AND INFORMATION SCIENCES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
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Important Notes

1. Submit your assignments to the Coordinator of your Study Centre on or before the due date. Please refer to <http://www.ignou.ac.in> for latest updates
2. Assignment submission before due dates is compulsory to become eligible for appearing in corresponding Term End Examinations. For further details, please refer to CMAD Programme Guide.
3. To become eligible for appearing the Term End Practical Examination for the lab courses, it is essential to fulfill the minimum attendance requirements as well as submission of assignments (on or before the due date). For further details, please refer to the CMAD Programme Guide.

Course Code : **BCS-091**
Course Title : **Introduction to Mobile Architecture**
Assignment Number : **CMAD/091/Assignment /2024**
Maximum Marks : **25**
Last Dates for Submission : **30th April, 2024 (for January session)**
31st October, 2024 (for July session)

This assignment has Four questions carrying a total of 25 marks. Answer all questions. You may use illustrations and diagrams to enhance your explanations.

- Question 1:** Consider the following two mobile apps: OLA and UBER. Now, compare them on the following parameters: (i) Ease of use (ii) Features (iii) Functionality. Make assumptions wherever necessary. **(10 marks)**
- Question 2:** List any 10 mobile operating systems. Compare any three of them with each other. **(5 marks)**
- Question 3:** List any 10 mobile processors. Compare any three of them with each other. **(5 marks)**
- Question 4:** List any 5 alternatives to Xcode. **(5 marks)**

Course Code	:	BCS-092
Course Title	:	Introduction to Databases
Assignment Number	:	CMAD/092/Assignment /2024
Maximum Marks	:	25
Last Dates for Submission	:	30th April, 2024 (for January session) 31st October, 2024 (for July session)

This assignment has four questions, carrying a total of 25 marks. Answer all questions. You may use illustrations and diagrams to enhance your explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the presentation format. The answer to each part of the question should be confined to about 300 words.

Question 1: (5 Marks)

Design an ER diagram for a Library book management system. The library has many books. The library keeps several copies of important books. Each book is identified by a unique identification number. In addition, the library records the ISBN number, title of the book, names of the authors of the book, publisher's name, and year of publication for the books. The books can be issued to members. A member pays Rs 1000 for yearly membership. Membership is renewed every year. A member can be issued a maximum of 5 books.

Identify and list the entities, attributes, relationships, cardinality, keys and constraints. Make and state suitable assumptions.

Question 2: (8 Marks)

Design the Relational Schema for the E-R diagram you drew for Question 1. The relations must be at least in 3NF. Perform the following operations on the relations:

- Enter about five sets of meaningful data in each of the relation.
- Specify the domain of various attributes.
- Specify the Primary key of every relation.
- Specify the Foreign keys and referential integrity constraints in the relations.

Question 3: (10 Marks)

Answer the following queries using SQL for the database created in Question 2.

- List the title of the Book whose ISBN number is 978-9332582705
- List the members whose membership is due for renew.
- Find the list of books with multiple copies in the library.
- List all the books that have been issued to the member having the member ID "A123"
- List the names of the members whose return of the book is overdue by one week.
- Find the member who has got the maximum number of books issued.
- List the names of the members who were issued the book having ISBN number 978-9332582705.
- List the members who were not issued even a single book.
- List the Book details and number of copies of each of these books.
- Calculate the total number of books issued in the last month.

Note: Make suitable assumptions, if any.

Question 4: (2 Marks)

Explain the process of development of a database system for an organisation.

Course Code	:	BCS-093
Course Title	:	Introduction to Android
Assignment Number	:	CMAD/091/Assignment /2024
Maximum Marks	:	25
Last Dates for Submission	:	30th April, 2024 (for January session) 31st October, 2024 (for July session)

There are Ten (10) questions in this assignment, which carries 25 marks. Each question carries 2.5 marks. Answer all the questions. You may use illustrations and diagrams to enhance the explanations. Include the screen layouts also along with your assignment responses.

- Question 1:** What is Android, and how does it differ from other mobile operating systems? Explain the open-source nature of the Android operating system. Discuss the history and evolution of the Android platform.
- Question 2:** Describe the architecture of the Android operating system. Explain the roles of the four main components in the Android architecture. Discuss the significance of the Linux kernel in the Android system.
- Question 3:** Define what an Activity is in the context of Android. Explain the significance of the Activity Lifecycle in Android app development.
- Question 4:** Describe the role of the Android Studio Integrated Development Environment (IDE). Explain the importance of the Android Software Development Kit (SDK) in Android development.
- Question 5:** Discuss how activities, services, broadcast receivers, and content providers interact with each other. Provide examples of scenarios where each component type is commonly used.
- Question 6:** Discuss the significance of ensuring device compatibility in Android app development. Explain how device compatibility impacts the user experience and the success of an application.
- Question 7:** Define the key principles of user interface design in the context of Android. Discuss the importance of creating intuitive and visually appealing interfaces for mobile applications.
- Question 8:** Discuss the advantages of sending push notifications over polling method. Write a program to send Push notifications from the Android application.
- Question 9:** Explain the process of integrating audio playback in an Android application. Discuss the MediaPlayer and AudioManager classes and their roles in media playback.
- Question 10:** Discuss possible security concerns of an Android application and explain how security can be enhanced by using device management policies.

Course Code : **BCS-094**
Course Title : **Programming using Python**
Assignment Number : **CMAD/094/Assignment/2024**
Maximum Marks : **25**
Last Dates for Submission : **30th April, 2024 (for January session)**
31st October, 2024 (for July session)

There are Eight questions in this assignment, which carries 25 marks. Answer all the questions. You may use illustrations and diagrams to enhance the explanations. Also, include the screen layouts along with your assignment responses.

- Question 1:** What are the basic features of Python Programming Language? Explain the concept of Overriding and Overloading in Python with the help of examples. **(3 Marks)**
- Question 2:** What is “string” in Python? Explain “string” formatting and escape sequences in Python. **(3 Marks)**
- Question 3:** What is the Lambda function? Write a Python program using the Lambda function to multiply two numbers. **(3 Marks)**
- Question 4:** Explain how a class is defined in Python with the help of a program. Also, explain the use of attributes and methods through this program. **(3 Marks)**
- Question 5:** What is need of Software Testing? Explain Functional testing and Non-functional testing. **(3 Marks)**
- Question 6:** What is GUI? Create a GUI using Tkinter that displays “Welcome to Python Programming” message in the window. Discuss the execution of lines of code written by you. Also, explain the advantages of Tkinter. **(3 Marks)**
- Question 7:** Write a Python code to create a database file and a table named ‘Student’ with three columns, ‘EnrollmentNo’, ‘Name’, ‘Programme’ and ‘Department’. Support your code with suitable comments. **(4 Marks)**
- Question 8:** Explain the role of Python in mobile applications development. **(3 Marks)**

Course Code	:	BCSL-091
Course Title	:	Programming using Python
Assignment Number	:	CMAD/L-094/Assignment/2024
Maximum Marks	:	25
Last Dates for Submission	:	30th April, 2024 (for January session) 31st October, 2024 (for July session)

Note: This assignment has three sections. Answer all questions in each section. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

Note: You must execute the programs/SQL commands and submit the program logic, sample input and output along with the necessary documentation. Assumptions can be made wherever necessary.

Section-1: Database portion of Lab

Question 1: **(2+3 Marks)**

Consider the following *relational schema*:

Student (Sid, Sname, ProgCode, DateofAdmission) – *Sid* is the student id (Primary Key) which is a unique identifier assigned by the University when the student takes admission into a Programme, *Sname* is the student name, *ProgCode* identifies the programme in which the student has taken admission (Foreign Key), *DateofAdmission* is the date when the student took admission.

Course (CourseCode, CourseName)– *CourseCode* is the name of the course and is the Primary Key, *CourseName* is the name of the course.

Result (Sid, CourseCode, ExaminationDate, Marks) –*Sid* is the student id, *CourseCode* is the identifier of the course or subject in which the student has taken admission (*Sid* + *Coursecode* are the composite Primary Key; please also note *Sid* is a foreign key that references *Student* relation and *CourseCode* is a foreign key that references the *Course* relation), *ExaminationDate* is the date of examination, *Marks* is the marks out of 100 in that examination.

- (a) Create the tables using SQL for the schema given above; you must include the Primary key, foreign keys and constraints in your implementation. Enter a few sets of meaningful data in each table.
- (b) Write and run SQL statements for the following queries:
 - (i) List the names of all the students who have been admitted to CMAD after 31st December 2023.
 - (ii) List the names of all the students who have appeared for the examination of the course whose code is “BCS092”.
 - (iii) Find the list of courses in which a student whose *Sid* is “2310009487” passed. Assume that the minimum marks for passing a course is 40.
 - (iv) List the student ID and the student's name who has passed at least five courses.
 - (v) Find the total number of Programmes.
 - (vi) Find the total number of students who have appeared for the examination of the course named “DBMS”.

Note: Make suitable assumptions, if any.

Section-2: Introduction to Android (BCS-093)

Question 2: Develop and Run a CALCULATOR Mobile APP. Include at least 3 arithmetic operations. Make assumptions, wherever necessary. **(10 Marks)**

Section-3: Programming using Python (BCS-094)

Question 3: **(10 Marks)**

Develop a GUI (details given below) by using Tkinter and wxPython, compare the code complexity and give your observations.

Details of GUI: the GUI should include:

- The personal details of person like Name, DOB, Email, Mobile, Address.
- The Employment Details like Designation, Nature of Job (Permanent, Temporary, contractual, daily wage etc.), Pay Scale, Duration etc.
- Health details like Weight, Height, Diabetic (Yes, NO), Any Surgery (Yes, NO), Health Summary etc.
- Submit and Clear Button for necessary action on the GUI.

Use suitable components like text box, combo box, list, Radio Button, Check Box, Buttons etc. Make suitable assumptions wherever necessary.