CERTIFICATE IN MOBILE APPLICATION DEVELOPMENT (CMAD)

Assignments

(January, 2023 & July, 2023 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 BCA 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 BCA Programme Guide.

Course Code	:	BCS-091
Course Title	:	**Introduction to Mobile Architecture**
Assignment Number	:	**CMAD/091/Assignment /2023**
Maximum Marks	:	**25**
Last Dates for Submission	:	**31st May, 2023 (for January session)**
		30th October, 2023 (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: **(10 Marks)**

Consider the following two mobile apps: SWIGGY and ZOMATO. Now, compare them on the following parameters: (i) Ease of use (ii) Features (iii) Functionality . Make assumptions, wherever necessary.

Question 2: **(5 Marks)**

What are the latest versions of iOS and Android. Compare latest version of iOS with earlier version.

Question 3: **(5 Marks)**

Write any 5 features of latest Qualcomm Snapdragon processor.

Question 4: **(5 Marks)**

Write any 5 features of Xcode.

Course Code   :   **BCS-092**
Course Title   :   **Introduction to Databases**
Assignment Number   :   **CMAD/092/Assignment /2023**
Maximum Marks   :   **25**
Last Dates for Submission :   **31st May, 2023 (for January session)**
                                 30th October, 2023 (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 format of the presentation. 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 University, which manages the students, Programmes, courses and student results. You should clearly identify the entities, relationships, relationship cardinality and key constraints in your answer. You must also add proper attributes for each entity. A brief description of the University is given below. Make suitable assumptions.

A University allows students to register for its programmes offered during an Academic year. The academic year starts in July and ends in June. All the programmes of the University are of 1-year duration. Each programme consists of 5 compulsory courses of 4 credits each. A student is given an account on the University MIS, where s/he can see her/his result. University conducts the examinations at the end of the academic year. A student is declared passed in a course if s/he secures 50% marks in the examination of that course. A student must pass all the courses of the programme in which s/he has registered. The students who have passed their programme are awarded a certificate during a convocation, which is held once a year.

Question 2:   **(8 Marks)**

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

   a) Enter about 5 sets of meaningful data in each of the relations.
   b) Identify the domain of various attributes.
   c) Identify the Primary key of every relation.
   d) Identify 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 1 and Question 2

   (i)   List the names of all the students of the Programme whose programme code is CMAD.
   (ii)   List the Programmes, which has no student.
   (iii)   Find the list of students who have been admitted to more than one Programme during the current academic year. (A student must have a unique ID)
   (iv)   List the user id of the student whose unique ID is "A001"
   (v)   List the students who have not passed all the courses of their programme.
   (vi)   Find the student who has secured the highest total marks in the BCA programme.

(vii) List the number of students who have passed the examination of the course DBMS in the present academic year.

(viii) List the details of the student who has not appeared in a single examination in the present academic year.

(ix) Find the details of the University topper (student with the highest percentage of marks among all the students of the University) of the current academic year.

(x) Make a programme-wise list of students who are awarded a certificate in the present academic year.

Note: Make suitable assumptions, if any.

Question 4: **(2 Marks)**

Explain any one model for the development of a database system for an organization.

Course Code	:	**BCS-093**
Course Title	:	**Introduction to Android**
Assignment Number	:	**CMAD/093/Assignment /2023**
Maximum Marks	:	**25**
Last Dates for Submission	:	**31st May, 2023 (for January session)**
		30th October, 2023 (for July session)

There are Ten 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 Operating System? Explain the different features of Android Operating System.

Question 2: Why is XML used for frontend development in Android? Explain the fundamentals of designing user interfaces using XML.

Question 3: List any 3 models with one exclusive feature of each smart phones that are Android based and are manufactured by different manufacturers.

Question 4: What is a Hardware Abstraction Layer (HAL)? List any four of its components.

Question 5: What is an Activity Stack? Explain it with the help of a diagram.

Question 6: Explain any five input controls available on a mobile app's user interface.

Question 7: Explain the process of debugging in Android Mobile App?

Question 8: Write a short note on Shared Preferences class. Make necessary assumptions; if necessary.

Question 9: Differentiate between Android and iOS Mobile Operating System.

Question 10: Discuss any five best practices for accessing and using sensors.

Course Code : **BCS-094**
Course Title : **Programming using PYTHON**
Assignment Number : **CMAD/094/Assignment/2023**
Maximum Marks : **25**
Last Date of Submission : **31ˢᵗ May, 2023 (for January session)**
30ᵗʰ October, 2023 (for July session)

There are Ten 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: Compare the basic features of Python with that of Java as a programming language.

Question 2: Explain the usage of break, continue and pass statements in Python, support your explanation with suitable example code for each.

Question 3: Describe Lambda functions? Write a Lambda function to print the Sum of two numbers. Also, write the program to print the Sum of two numbers, without using Lambda functions.

Question 4: Compare mutable data types with immutable data types in Python ? List the immutable and mutable data types, separately. Discuss mutable and immutable data type, with their respective syntax in Python.

Question 5: Explain the concept of Overriding and Overloading in Python. Give suitable code for each.

Question 6: Describe the term Software Testing ? How does Software Testing relates to software reliability? Differentiate between Functional testing and Non-functional testing.

Question 7: Compare Black box and White box testing. Explain the term ''Boundary Value Analysis'' in the context of software testing.

Question 8: Write a Python code to create a database file and a table named 'EmployeeDetails' with three columns, 'EmpID', 'EmpName' and 'Department'. Support your code with suitable comments.

Question 9: Draw the block diagram for the architecture of Kivy. Discuss the core provider, input provider and graphics components in the Kivy architecture.

Question 10: What is TKinter ? Create a GUI using Tkinter that displays ''Hello World'' message in the window. Discuss the execution of lines of code written by you.

Course Code	:	BCSL-091
Course Title	:	Laboratory Course Assignment
Number	:	CMAD/L-091/Assignment/20223
Maximum Marks	:	25
Last Date of Submission	:	31st May, 2023 (for January session)
		30th October, 2023 (for July session)

This Assignment carries questions from the course BCS-092 for 5 marks, and from the courses BCS-093 for 10 marks and BCS-094 for 10 marks, respectively. In all the questions given in this assignment carries 25 marks, in total. Answer all the questions. You may use illustrations and diagrams to enhance the explanations. Include the screen layouts also along with your assignment responses.

Section-1: Introduction to Databases(BCS-092) (5 Marks)

Question1:   Consider the following *relational schema:*

Account (AccountNo, Balance, DateOfStart, CustomerID) – AccountNO is a unique number given to every account with the Bank (Primary Key), **Balance** is the present balance of the account, **DateofStart** is the date of opening the account and **CustomerID** is a unique ID given to each customer (Foreign Key).

Customer (CustomerID, CustomerName) – CustomerID is the Primary Key and *CustomerName* is the name of the customer. A customer can open several accounts with the Bank.

  (a) Create the tables using SQL from the schema as given above; you must include Primary key, foreign keys and constraints in your implementation. Enter few sets of meaningful data in each table.   **(2 Marks)**

  (b) Write and run SQL statements for the following queries: **(3 Marks)**
        (i)   List the account numbers of the customers whose name is "RAKESH".
        (ii) List the total balance of the customer whose customer ID is "C001"
        (iii) Find the accounts that were opened after 01-01-2022.
        (iv) List the Customer Names of the customers who have more than one account.
        (v) Assuming a customer is given an interest at the rate of 3% on the present balance, compute the interest amount for each account.
        (vi) Find the list of customers who has zero balance in their account.
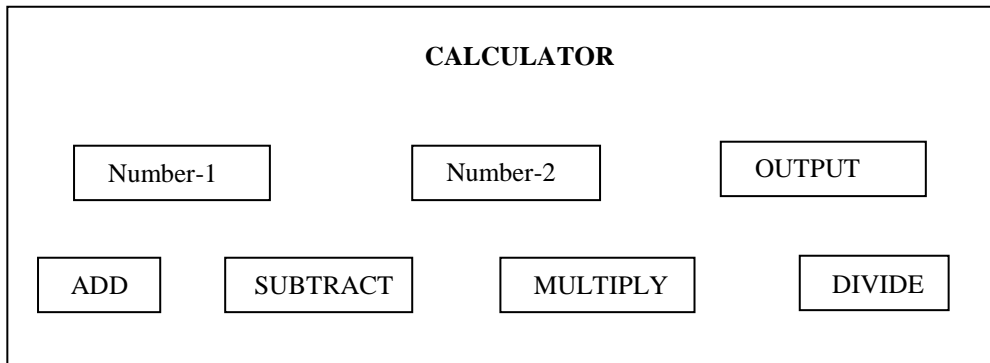
 Note: Make suitable assumptions, if any.

Section-2: Introduction to Android (BCS-093) (10-Marks)

Question2: Develop and Run a Mobile APP which converts Centimeters into Inches. Make assumptions, wherever necessary.   **(10 Marks)**

Section-3: Programming using Python (BCS-094)(10-Marks)

Question 3: Write a Python code to create a database file and a table named 'Student_Details' with three columns, 'Roll_No', 'Student_Name' and 'Student_Class'. Support your code with suitable comments.

Question 4: Develop a GUI (details given below)by Using Tkinter and wxPython, compare the code complexity of both and give your observation.   **(7 Marks)**

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┌─────────────────────────────────────────────────────────┐
│                        CALCULATOR                        │
│                                                          │
│    ┌─────────────┐     ┌─────────────┐   ┌────────────┐  │
│    │  Number-1   │     │  Number-2   │   │  OUTPUT    │  │
│    └─────────────┘     └─────────────┘   └────────────┘  │
│  ┌─────────┐  ┌─────────────┐  ┌─────────────┐ ┌───────┐ │
│  │  ADD    │  │  SUBTRACT   │  │  MULTIPLY   │ │DIVIDE │ │
│  └─────────┘  └─────────────┘  └─────────────┘ └───────┘ │
│                                                          │
└─────────────────────────────────────────────────────────┘
```

Details of GUI : the GUI for Truth table should accept two bits (0 or 1) as input and produce the Output as per the Logical operation to be chosen by pressing the button of that particular logical operation i.e. AND, OR, NOT,NAND, NOR, XOR. You may use other suitable components like text box, combo box, list, Radio Button, Check Box, Buttons etc. to implement the GUI.

(Note: Make suitable assumptions where ever necessary)