

# Backend assignment

# Software Engineering Assignment

## MODULE: 1 (SDLC)

- What is software? What is software engineering?
- Explain types of software
- What is SDLC? Explain each phase of SDLC
- What is DFD? Create a DFD diagram on Flipkart
- What is Flow chart? Create a flowchart to make addition of two numbers
- What is Use case Diagram? Create a use-case on bill payment on paytm.

## MODULE: 2 (HTML)

- Define the terms: Website, Webpage, Web browser, Web server, HTML, CSS
- Create a webpage to show “This is my first HTML page”
- Display top 10 IT companies list in html webpage
- Create a dropdown list
- Create a Table Of college Management system using row span & col span.
- Create below table using HTML table tags

European Roulette													
0	3	6	9	12	15	18	21	24	27	30	33	36	2to1
	2	5	8	11	14	17	20	23	26	29	32	35	2to1
	1	4	7	10	13	16	19	22	25	28	31	34	2to1
	1st12				2nd12				3rd12				
	1to18		EVEN						ODD		19to36		

- Create Registration form using HTML, CSS
- In how many ways can a CSS be integrated as a web page?
- Create simple three pages using External CSS, Internal CSS, and Inline CSS.
- Create below page using HTML CSS

**Individual Registration**

**User Particulars**

\* Login ID

\* Password

\* Confirm Password

**Personal Particulars**

* Salutation <input type="text" value="Select"/>	* First Name <input type="text"/>
Middle Name <input type="text"/>	* Last Name <input type="text"/>
* Resident Status <input type="text" value="Select"/>	* Country <input type="text" value="Select"/>
* Email-Id <input type="text"/>	* Mobile Number <input type="text"/>

**Account Particulars**

* 15 Digit Account No <input type="text"/>	* Nick Name <input type="text"/>
* Fund Transfer <input type="text" value="Select"/>	

**DECLARATION**

I have read, understood and hereby agree to the Terms and Conditions in respect of all products and channels.

I understand that any changes in the terms and conditions applicable to this relationship would be made available to me on request at any IOB branches. I confirm that all accounts under this login name are operated singly and in case of joint account operated by either or survivor/ anyone or survivor(s) under his/her joint name respectively. I do hereby declare that information furnished in this form is true to the best of my knowledge and belief.

- Create link-pseudo classes using external css, to format links on the pages.
- Create a dynamic pseudo class using HTML, CSS

## **MODULE: 3.1 (C Language Fundamental)**

- Display This Information using printf
  1. Your Name
  2. Your Birth date
  3. Your Age
  4. Your Address
- Write a program to make Simple calculator (to make addition, subtraction, multiplication, division and modulo)
- WAP to find area of circle, rectangle and triangle
- WAP to find simple interest
- WAP to check if the given year is a leap year or not.
- WAP to convert years into days and days into years

## **MODULE: 3.2 (C Language Programing with C)**

- WAP to make simple calculator (operation include Addition, Subtraction, Multiplication, Division, modulo)
- WAP to swap two numbers without using third variable
- WAP to find number is even or odd using ternary operator
- WAP to show
  1. Monday to Sunday using switch case
  2. Vowel or Consonant using switch case
- Looping programs:
  1. WAP to print 972 to 897 using for loop
  2. WAP to take 10 no. Input from user and find out ...
  3. How many Even numbers are there
  4. How many odd numbers are there
  5. Sum of even numbers
  6. Sum of odd numbers WAP to print table up to given numbers

- WAP to print factorial of given number
- WAP to print Fibonacci series up to given numbers
- WAP to print number in reverse order e.g.: number = 64728 ---> reverse = 82746
- Write a program to find out the max from given number (E.g., No: -1562 Max number is 6)
- Write a program make a summation of given number (E.g., 1523 Ans: -11)
- Write a program you have to make a summation of first and last Digit. (E.g., 1234 Ans: -5)

Patterns:

1	A	*	*
1 0	B C	* * *	* *
1 0 1	D E F	* * * * *	* * *
1 0 1 0	G H I J	* * * * * *	* * * *
1 0 1 0 1	K L M N O	* * * * * *	* * * * *
			* * * * *
			* * * * *
			* * * *
			* * *
			* *
			*

1	A
2 3	A B
4 5 6	A B C
7 8 9 10	A B C D
11 12 13 14 15	A B C D E

## MODULE: 3.3 (File Handling and Debugging)

- Write a program to find out the max number from given array using function
- WAP of Addition, Subtraction, Multiplication and Division using Switch case.(Must Be Menu Driven)
- WAP to find reverse of string using recursion
- WAP to find factorial using recursion
- WAP to take two Array input from user and sort them in ascending or descending order as per user's choice

- WAP to make addition, Subtraction and multiplication of two matrix using 2-D Array
- WAP Find out length of string without using inbuilt function
- WAP to reverse a string and check that the string is palindrome or not
- Write a program of structure employee that provides the following information -print and display empno, empname, address and age
- Write a program of structure for five employee that provides the following information -print and display empno, empname, address and age
- WAP to show difference between Structure and Union.

## **MODULE: 4.1 (C++ Basic)**

- WAP to print “Hello World” using C++
- What is OOP? List OOP concepts
- What is the difference between OOP and POP?

## **MODULE: 4.2 (Programing with C++)**

- WAP to create simple calculator using class
- Define a class to represent a bank account. Include the following members:
  1. Data Member:
    - Name of the depositor
    - Account Number
    - Type of Account
    - Balance amount in the account

## 2. Member Functions

- To assign values
  - To deposited an amount
  - To withdraw an amount after checking balance
  - To display name and balance
- Write a program to find the multiplication values and the cubic values using inline function
  - Write a program of Addition, Subtraction, Division, Multiplication using constructor.
  - Write a program of Addition, Subtraction, Division, Multiplication using constructor.
  - Assume a class cricketer is declared. Declare a derived class batsman from cricketer. Data member of batsman. Total runs, Average runs and best performance. Member functions input data, calculate average runs, Display data. (Single Inheritance)
  - Create a class person having members name and age. Derive a class student having member percentage. Derive another class teacher having member salary. Write necessary member function to initialize, read and write data. Write also Main function (Multiple Inheritance)
  - Assume that the test results of a batch of students are stored in three different classes. Class Students are storing the roll number. Class Test stores the marks obtained in two subjects and class result contains the total marks obtained in the test. The class result can inherit the details of the marks obtained in the test and roll number of students. (Multilevel Inheritance)
  - Write a program to Mathematic operation like Addition, Subtraction, Multiplication, Division Of two number using different parameters and Function Overloading
  - Write a Program of Two 1D Matrix Addition using Operator Overloading
  - Write a program to concatenate the two strings using Operator Overloading

- Write a program to calculate the area of circle, rectangle and triangle using Function Overloading
  - Rectangle: Area \* breadth
  - Triangle:  $\frac{1}{2}$  \* Area \* breadth
  - Circle: Pi \* Area \* Area
- Write a program to swap the two numbers using friend function without using third variable
- Write a program to find the max number from given two numbers using friend function

## **MODULE: 4.2 (C, C++ Templates)**

- Write a program of to swap the two values using templates
- Write a program of to sort the array using templates.

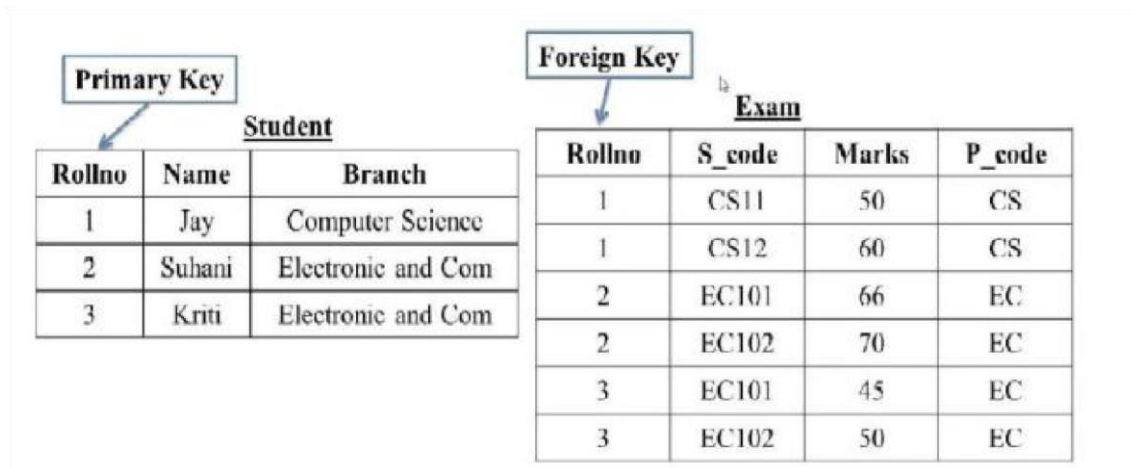
## **MODULE: 5 (Database)**

- What do you understand By Database
- What is Normalization?
- What is Difference between DBMS and RDBMS?
- What is MF Cod Rule of RDBMS Systems?
- What do you understand By Data Redundancy?
- What is DDL Interpreter?
- What is DML Compiler in SQL?
- What is SQL Key Constraints writing an Example of SQL Key Constraints
- What is save Point? How to create a save Point write a Query?
- What is trigger and how to create a Trigger in SQL?



## Task

1. Create Table Name : Student and Exam



2. Create table given below

First Name	Last Name	Address	City	Age
Mickey	Mouse	123 Fantasy Way	Anaheim	73
Bat	Man	321 Cavern Ave	Gotham	54
Wonder	Woman	987 Truth Way	Paradise	39
Donald	Duck	555 Quack Street	Mallard	65
Bugs	Bunny	567 Carrot Street	Rascal	58
Wiley	Coyote	999 Acme Way	Canyon	61
Cat	Woman	234 Purrfect Street	Hairball	32
Tweety	Bird	543	Itotltaw	28

### 3. Create table given below: Employee and Incentive

Table Name: Employee

Employee_id	First_name	Last_name	Salary	Joining_date	Department
1	John	Abraham	1000000	01-JAN-13 12.00.00 AM	Banking
2	Michael	Clarke	800000	01-JAN-13 12.00.00 AM	Insurance
3	Roy	Thomas	700000	01-FEB-13 12.00.00 AM	Banking
4	Tom	Jose	600000	01-FEB-13 12.00.00 AM	Insurance
5	Jerry	Pinto	650000	01-FEB-13 12.00.00 AM	Insurance
6	Philip	Mathew	750000	01-JAN-13 12.00.00 AM	Services
7	TestName1	123	650000	01-JAN-13 12.00.00 AM	Services
8	TestName2	Lname%	600000	01-FEB-13 12.00.00 AM	Insurance

Table Name: Incentive

Employee_ref_id	Incentive_date	Incentive_amount
1	01-FEB-13	5000
2	01-FEB-13	3000
3	01-FEB-13	4000
1	01-JAN-13	4500
2	01-JAN-13	3500

- Get First\_Name from employee table using Tom name "Employee Name".
- Get FIRST\_NAME, Joining Date, and Salary from employee table.

- c) Get all employee details from the employee table order by First\_Name Ascending and Salary descending?
- d) Get employee details from employee table whose first name contains 'J'.
- e) Get department wise maximum salary from employee table order by salary ascending?
- f) Select first\_name, incentive amount from employee and incentives table for those employees who have incentives and incentive amount greater than 3000
- g) Create After Insert trigger on Employee table which insert records in view table

4. Create table given below: Salesperson and Customer

TABLE-1

TABLE NAME- SALSEPERSON

(PK)SNo	SNAME	CITY	COMM
1001	Peel	London	.12
1002	Serres	San Jose	.13
1004	Motika	London	.11
1007	Rafkin	Barcelona	.15
1003	Axelrod	New York	.1

TABLE-2

TABLE NAME- CUSTOMER

(PK)CNM.	CNAME	CITY	RATING	(FK)SNo
201	Hoffman	London	100	1001
202	Giovanne	Roe	200	1003
203	Liu	San Jose	300	1002
204	Grass	Barcelona	100	1002
206	Clemens	London	300	1007
207	Pereira	Roe	100	1004

Retrieve the below data from above table

- a) All orders for more than \$1000.
- b) Names and cities of all salespeople in London with commission above 0.12
- c) All salespeople either in Barcelona or in London

- d) All salespeople with commission between 0.10 and 0.12. (Boundary values should be excluded).
- e) All customers excluding those with rating  $\leq 100$  unless they are located in Rome

# Python Assignment

## Module – 2 (Fundamentals of python)

- Write a Python program to check if a number is positive, negative or zero.
- Write a Python program to get the Factorial number of given number.
- Write a Python program to get the Fibonacci series of given range.
- How memory is managed in Python?
- What is the purpose continue statement in python?
- Write python program that swap two number with temp variable and without temp variable.
- Write a Python program to find whether a given number is even or odd, print out an appropriate message to the user.
- Write a Python program to test whether a passed letter is a vowel or not.
- Write a Python program to sum of three given integers. However, if two values are equal sum will be zero.
- Write a Python program that will return true if the two given integer values are equal or their sum or difference is 5.
- Write a python program to sum of the first n positive integers.
- Write a Python program to calculate the length of a string.
- Write a Python program to count the number of characters (character frequency) in a string
- What are negative indexes and why are they used?
- Write a Python program to count occurrences of a substring in a string.
- Write a Python program to count the occurrences of each word in a given sentence

- Write a Python program to get a single string from two given strings, separated by a space and swap the first two characters of each string.
- Write a Python program to add 'ing' at the end of a given string (length should be at least 3). If the given string already ends with 'ing' then add 'ly' instead if the string length of the given string is less than 3, leave it unchanged.
- Write a Python program to find the first appearance of the substring 'not' and 'poor' from a given string, if 'not' follows the 'poor', replace the whole 'not'...'poor' substring with 'good'. Return the resulting string.
- Write a Python function that takes a list of words and returns the length of the longest one.
- Write a Python function to reverse a string if its length is a multiple of 4.
- Write a Python program to get a string made of the first 2 and the last 2 chars from a given string. If the string length is less than 2, return instead of the empty string.
- Write a Python function to insert a string in the middle of a string.

## **Module – 3 (Collections, functions and Modules)**

- What is List? How will you reverse a list?
- How will you remove last object from a list?  
Suppose list1 is [2, 33, 222, 14, and 25], what is list1 [-1]?
- Differentiate between append () and extend () methods?
- Write a Python function to get the largest number, smallest num and sum of all from a list.
- How will you compare two lists?

- Write a Python program to count the number of strings where the string length is 2 or more and the first and last character are same from a given list of strings.
- Write a Python program to remove duplicates from a list.
- Write a Python program to check a list is empty or not.
- Write a Python function that takes two lists and returns true if they have at least one common member.
- Write a Python program to generate and print a list of first and last 5 elements where the values are square of numbers between 1 and 30.
- Write a Python function that takes a list and returns a new list with unique elements of the first list.
- Write a Python program to convert a list of characters into a string.
- Write a Python program to select an item randomly from a list.
- Write a Python program to find the second smallest number in a list.
- Write a Python program to get unique values from a list
- Write a Python program to check whether a list contains a sub list
- Write a Python program to split a list into different variables.
- What is tuple? Difference between list and tuple.
- Write a Python program to create a tuple with different data types.
- Write a Python program to create a tuple with numbers.
- Write a Python program to convert a tuple to a string.
- Write a Python program to check whether an element exists within a tuple.
- Write a Python program to find the length of a tuple.
- Write a Python program to convert a list to a tuple.
- Write a Python program to reverse a tuple.
- Write a Python program to replace last value of tuples in a list.
- Write a Python program to find the repeated items of a tuple.
- Write a Python program to remove an empty tuple(s) from a list of tuples.
- Write a Python program to unzip a list of tuples into individual lists.
- Write a Python program to convert a list of tuples into a dictionary.
- How will you create a dictionary using tuples in python?



- Write a Python script to sort (ascending and descending) a dictionary by value.
- Write a Python script to concatenate following dictionaries to create a new one.
- Write a Python script to check if a given key already exists in a dictionary.
- How Do You Traverse Through A Dictionary Object In Python?
- How Do You Check The Presence Of A Key In A Dictionary?
- Write a Python script to print a dictionary where the keys are numbers between 1 and 15.
- Write a Python program to check multiple keys exists in a dictionary
- Write a Python script to merge two Python dictionaries
- Write a Python program to map two lists into a dictionary
- Write a Python program to combine two dictionary adding values for common keys.

`d1 = {'a': 100, 'b': 200, 'c': 300} o d2 = {'a': 300, 'b': 200, 'd': 400}`

**Sample output: Counter ({'a': 400, 'b': 400, 'd': 400, 'c': 300}).**

- Write a Python program to print all unique values in a dictionary.
- Why Do You Use the Zip () Method in Python?
- Write a Python program to create and display all combinations of letters, selecting each letter from a different key in a dictionary.

Sample data: {'1': ['a','b'], '2': ['c','d']}

**Expected Output:**

**ac ad bc bd**

- Write a Python program to find the highest 3 values in a dictionary
- Write a Python program to combine values in python list of dictionaries.  
Sample data: [{'item': 'item1', 'amount': 400}, {'item': 'item2', 'amount': 300}, o {'item': 'item1', 'amount': 750}]

**Expected Output:**

**Counter ({'item1': 1150, 'item2': 300})**

- Write a Python program to create a dictionary from a string.



Note: Track the count of the letters from the string.

Sample string: 'w3resource'

**Expected output:**

**{'3': 1, 's': 1, 'r': 2, 'u': 1, 'w': 1, 'c': 1, 'e': 2, 'o': 1}**

- Write a Python function to calculate the factorial of a number (a nonnegative integer)
- Write a Python function to check whether a number is in a given range
- Write a Python function to check whether a number is perfect or not.
- Write a Python function that checks whether a passed string is palindrome or not
- How Many Basic Types Of Functions Are Available In Python?
- How can you pick a random item from a list or tuple?
- How can you pick a random item from a range?
- How can you get a random number in python?
- How will you set the starting value in generating random numbers?
- How will you randomizes the items of a list in place?
- Write a Python program to read a random line from a file.
- Write a Python program to convert degree to radian
- Write a Python program to calculate the area of a trapezoid
- Write a Python program to calculate the area of a parallelogram
- Write a Python program to calculate surface volume and area of a cylinder
- Write a Python program to returns sum of all divisors of a number
- Write a Python program to find the maximum and minimum numbers from the specified decimal numbers.

## **Module – 4 (Advance python programming)**

- What is File function in python? What is keywords to create and write file.
- Write a Python program to read an entire text file.
- Write a Python program to append text to a file and display the text.
- Write a Python program to read first n lines of a file.
- Write a Python program to read last n lines of a file.
- Write a Python program to read a file line by line and store it into a list
- Write a Python program to read a file line by line store it into a variable.
- Write a python program to find the longest words.
- Write a Python program to count the number of lines in a text file.
- Write a Python program to count the frequency of words in a file.
- Write a Python program to write a list to a file.
- Write a Python program to copy the contents of a file to another file.
- Explain Exception handling? What is an Error in Python?
- How many except statements can a try-except block have? Name Some built-in exception classes:
- When will the else part of try-except-else be executed?
- Can one block of except statements handle multiple exception?
- When is the finally block executed?
- What happens when „1“== 1 is executed?
- How Do You Handle Exceptions With Try/Except/Finally In Python? Explain with coding snippets.
- Write python program that user to enter only odd numbers, else will raise an exception.
- What are oops concepts? Is multiple inheritance supported in java
- How to Define a Class in Python? What Is Self? Give An Example Of A Python Class

- Write a Python class named Rectangle constructed by a length and width and a method which will compute the area of a rectangle
- Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle
- Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle
- Explain Inheritance in Python with an example? What is init? Or What Is A Constructor In Python?
- What is Instantiation in terms of OOP terminology?
- What is used to check whether an object o is an instance of class A?
- What relationship is appropriate for Course and Faculty?
- What relationship is appropriate for Student and Person?

## **Module – 5 (DB and Python Framework)**

- Why Django should be used for web-development? Explain how you can create a project in Django?
- How to check installed version of django?
- Explain what does django-admin.py make messages command is used for?
- What is Django URLs? make program to create django urls
- What is a QuerySet? Write program to create a new Post object in database:
- Mention what command line can be used to load data into Django?
- Explain what does django-admin.py make messages command is used for?
- Make Django application to demonstrate following things
  - o There will be 2 modules (Admin, Product manager)
  - o Admin can add product name (ex. Product id and product name) ex. (1, Samsung), (2, Apple)...etc.Data should store in

- Product\_mst table with product id as primary key o Admin can add product subcategory details Like (Product price, product image, Product model, product Ram) data should store in Product\_sub\_cat table o Admin can get product name as foreign key from product\_mst table in product\_sub\_category\_details page Admin can view, update and delete all registered details of product manager can search product on search bar and get all details about product.

## **Module - 6 (Rest Framework)**

- Create Django REST API using below instruction.
- Create Book Model
- Title
- Author
- Isbn
- Publisher
- Using Serialize, display all data in REST API
- Also Using REST API, perfume CRUD Operation.