MANGALORE UNIVERSITY

National Education Policy – 2020
[NEP-2020]

IV SEMESTER BCA
BLOWNUP & PRACTICAL LISTS

Course Title: Python Programming	Course code: 21BCA3C10L
Total Contact Hours: 42	Course Credits: 03+02
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

DSC10: Python Programming

Course Contents:

Topics	**Book**	**Chapter /Page No/Section**
UNIT 1[11 HOURS]		
Introduction to Python; Features, flavors of Python, Writing and Executing Python Program.	2	Page No 1 to 4, 10 ,11 ,31,32
Python Basics: Identifiers;Keywords; Statements and Expressions; Variables; Operators; Precedence and Association; Data Types; Indentation; Comments; Console Input and Console Output, Type Conversions.	1	Chapter 2 Complete
Python Control Flow: Types of Control Flow; Control Flow Statements- if, else, elif, while loop, break, continue statements, for loop Statement; range () and exit () functions.	1	Chapter 3 3.1 to 3.7
Exception Handling: Types of Errors; Exceptions; Exception Handling using try, except and finally.	1	Chapter 3 3.8 All subsections

Python Functions: Built in Functions. User defined functions: Definition- Syntax, Function Calling, Passing Parameters/arguments, the return statement; Scope and Lifetime of Variables in Functions,Default Parameters; Key Word Arguments; Command line Arguments.	1	Chapter 4 Complete
UNIT 2[11 HOURS]		
Strings: Creating and Storing Strings; Accessing Sting Characters; the str() function; Operations on Strings- Concatenation, Comparison, Slicing and Joining, Traversing; Python String Methods,	1	Chapter 5 5.1 to 5.5 All Sub sections included
Lists: Creating Lists; Operations on Lists; Built-in Functions on Lists; Implementation of Stacks and Queues using Lists; Nested Lists.	1	Chapter 6 6.1 to 6.5 All Sub sections included
Dictionaries: Creating Dictionaries; Operations on Dictionaries; Built-in Functions on Dictionaries; Dictionary Methods; Populating and Traversing Dictionaries.	1	Chapter 7 7.1 to 7.4 All Sub sections included
Tuples and Sets: Creating Tuples; Operations on Tuples; Built-in Functions on Tuples; Tuple Methods; Creating Sets; Operations on Sets; Built-in Functions on Sets; Set Methods.	1	Chapter 8 8.1 to 8.4 ,8.7 ,8.9,8.10 All Sub sections included

UNIT 3 [10 HOURS]		
File Handling: File Types; Operations on Files– Create, Open, Read, Write, Close Files; File Names and Paths. **Object Oriented Programming:** Classes and Objects; Creating Classes and Objects; Constructor Method; Classes with Multiple Objects; Objects as Arguments; Objects as Return Values; Inheritance- Single and Multiple Inheritance, Multilevel and Multipath Inheritance; Encapsulation- Definition, Private Instance Variables; Polymorphism- Definition, Operator Overloading. **GU Interface:** The tkinter Module; Window and Widgets; Text, label ,Button , entry , Listbox ,checkbuttonRadiobutton ,scrollbar, Spinbox. Layout Management- pack, grid and place	1 1 2	Chapter 9 9.1 to 9.3 All sub sections included Chapter 11 11.1 to 11.5 ,11.7 to 11.9 All sub sections included Page.Nos 570,571,576,584 To 613
UNIT 4[10 HOURS]		
Python SQLite: The SQLite3 module; SQLite Methods- connect, cursor, execute, close; Connect to Database; Create Table; Operations on Tables,Insert, Select, Update. Delete and Drop Records. **Data Analysis:** NumPy- Introduction to NumPy, Array Creation using NumPy, Operations on Arrays; Pandas- Introduction to Pandas, Series and DataFrames.	1	**Study material** Chapter 12 *12.3 to 12.3.5* 12.4 to 12.4.2 (uptopageNo 385)

Creating DataFrames from Excel Sheet and .csv file, Dictionary and Tuples. Operations on DataFrames.	2	P.No 694 to 701
Data Visualization: Introduction to Data Visualisation; Matplotlib Library; Different Types of Charts using Pyplot- Line chart, Bar chart and Histogram and Pie chart	2	P.No 705 to 712

Text Book:

1. Introduction to Python Programming by Gowrishankar S and Veena A.
2. Core Python Programming Dr. R. Nageshwara Rao.

Reference Books:

1. Think Python How to Think Like a Computer Scientist, Allen Downey et al., 2ndEdition, Green Tea Press. Freely available online @ https://www.greenteapress.com/thinkpython/thinkCSpy.pdf , 2015
2. Introduction to Python Programming, Gowrishankar S et al., CRC Press, 2019.
3. Python Data Analytics: Data Analysis and Science Using Pandas, matplotlib, and the Python Programming Language, Fabio Nelli, Apress®, 2015
4. Advance Core Python Programming, MeenuKohli, BPB Publications, 2021.
5. Core PYTHON Applications Programming, Wesley J. Chun, 3rd Edition, Prentice Hall, 2012.
6. Automate the Boring Stuff, Al Sweigart, No Starch Press, Inc, 2015.
7. Data Structures and Program Design Using Python, D Malhotra et al., Mercury Learning and Information LLC, 2021.
8. http://www.ibiblio.org/g2swap/byteofpython/read/
9. https://docs.python.org/3/tutorial/index.html

Course Title: Computer Multimedia & Animation	Course code: 21BCA3C11L
Total Contact Hours: 42	Course Credits: 03+02
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

DSC11: Computer Multimedia & Animation

Topics	Book	Page No/Section
UNIT 1[11 HOURS]		
Web Design: Origins and evolution of HTML, Basic syntax, Basic text markup, Images, Lists, Tables, Forms, Frame, Overview and features of HTML5.	Book 1	Chapter 1: Page No: 3-49 Chapter 2: Page No: 55-82, 101 – 106 Chapter 3: Page No: 154 – 422 (In HTML element reference only following to be discussed comment, conditional comment, document type declaration, anchor tag, article tag, aside tag, audio tag, bold tag, body tag, line break tag, form button tag, table caption tag, center tag, div tag, dl tag, dt tag, emphasis tag, field set tag, figure tag, font tag, footer tag, form tag, h1 to h6 tag, head tag, header tag, ht tag, html tag, italic tag, iframe tag, image tag, input tag, label tag, legend tag, li tag, link tag, marquee tag, nav tag, ordered list, <p> tag, script tag, section tag, select tag, span tag, style tag, table tag and all table related tags, time tag, title tag, unordered list tag, video tag)
JavaScript: Object orientation and JavaScript; General syntactic characteristics; Primitives, operations, and expressions; Screen output and keyboard input.	Book 3	Chapter 1: Page No: 7-10 Chapter 2 to Chapter 8

		(Full Chapters) Chapter 09: Page No:224-228 Chapter 10: Page No:249-251, 255-256
UNIT 2[11 HOURS]		
CSS: Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The and tags; Overview and features of CSS3. **Animation:** Introduction, Start and End States, Interpolation, Animations in HTML. All About CSS Animations, Creating a Simple Animation, Detailed Look at the CSS Animation Property, Keyframes, Declaring Multiple Animations, Wrap-up. All About CSS Transitions, Adding a Transition, Looking at Transitions in Detail, The Longhand Properties, Longhand Properties vs. Shorthand Properties, Working with Multiple Transitions.	Book 4 Book 2	Introduction: Page No: 1-8 Chapter 1: Page No: 17-31 Chapter 2: Page No: 35-54 Chapter 3: Page No: 55-92 Chapter 6: Page No: 127-191 Chapter 7: Page No: 193-237 Page No: 14-20 Page No: 22-46 Page No: 47-60
UNIT 3[10 HOURS]		
HTML5 – SVG: Viewing SVG Files, Embedding SVG in HTML5, HTML5 − SVG Circle, HTML5 − SVG Rectangle, HTML5 − SVG Line, HTML5 − SVG Ellipse, HTML5 − SVG Polygon, HTML5 − SVG Polyline, HTML5 − SVG Gradients, HTML5 − SVG Star	Material supplied by University	
UNIT 4[10 HOURS]		
HTML5 – CANVAS: The Rendering Context, Browser Support, HTML5 Canvas Examples, Canvas - Drawing Rectangles, Canvas - Drawing Paths, Canvas - Drawing Lines, **Canvas** - Drawing Bezier Curves, Canvas - Drawing Quadratic Curves, Canvas - Using Images, Canvas - Create Gradients, HTML5 - Styles and Colors, Canvas - Text and Fonts, Canvas - Pattern and Shadow, Canvas - Save and Restore States, Canvas - Translation, Canvas - Rotation, Canvas - Scaling, Canvas -	Book 1 Material supplied by university	Page no: 82-100 Page no: 198-208 Material only for Canvas - Animation

Transforms, HTML5 Canvas - Composition, Canvas – Animations.		

Book 1: The Complete Reference HTML and CSS, 5th Edition, Thomas A Powell, 2017.
Book 2: Animation in HTML, CSS, and JavaScript, Kirupa Chinnathambi, 1st Edition, Createspace Independent Pub, 2013.
Book 3: JavaScript – A Beginner's Guide, John Pollock, Mc Graw Hill Publications Third Edition
Book 4: CSS3 – The missing manual, David Sawyer McFarland, Third Edition, O'Reilly Media, Inc - 2012

Reference Books:

1. The Complete Reference HTML and CSS, 5th Edition, Thomas A Powell, 2017.
2. Animation in HTML, CSS, and JavaScript, KirupaChinnathambi, 1st Edition, Createspace Independent Pub, 2013.
3. https://www.w3.org/Style/CSS/current-work#CSS3
4. http://bedford-computing.co.uk/learning/cascading-style-sheets-css/

Course Title: Operating System Concepts	Course code: 21BCA3C12L
Total Contact Hours: 42	Course Credits: 03+02
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

DSC8: Operating System Concepts

Course Contents:

Topics	**Book**	**Chapter /Page No/Section**
UNIT 1[11 HOURS]		
Introduction to Operating System: Definition, History and Examples of Operating System;	BOOK-1	BOOK 1 Chapter 1: 1.1 to 1.6(Page No:3-33)
Types of Operating Systems;	BOOK 2	BOOK 2 Chapter 1:1.2,1.3,1.4,1.5,1.6, 1.7,1.8(Page No:7-20)
Functions of Operating System; Systems Calls; Operating System Structure.	BOOK 1	BOOK 1 Chapter 2: 2.1 to 2.6,2.8 (Page No:55-76) (Page No:81-91)
File System: File Concepts-Attributes, Operations and Types of Files; File System; File Access methods; Directory Structure; Protection; File System	BOOK 1	BOOK 1 Chapter 13: 13.1 to 13.4 (Page No:529-555)

Implementation- File System Structure, Allocation Methods, Free Space Management.		Chapter 14: 14.1 to 14.5 (Page No:563-581)
UNIT 2[11 HOURS]		
Memory Management: Logical and Physical Address Space; Swapping; Contiguous Allocation; Paging; Segmentation; Segmentation with Paging. **Virtual Memory:** Introduction to Virtual Memory; Demand Paging; Page Replacement; Page Replacement Algorithms; Allocation of frames, Thrashing **Disk Scheduling (I/O Management):** Introduction and Scheduling Algorithm	BOOK- 1 Book-2 BOOK -1 BOOK-2	BOOK- 1 Chapter 9: 9.1,9.2, 9.3,9.4,9.5 (Page No:349-378) BOOK-2 Chapter 9:9.5 (Page No:303-312) BOOK- 1 Chapter 10: 10.1,10.2,10.3,10.4(Except 10.4.7 and 10.4.8),10.5,10.6 (Page No:389-412,413-425) BOOK-2 Chapter 14: 14.1-14.3 (Page No:491-502)
UNIT 3[10 HOURS]		
Process Management: Process Concept- Process Definition, Process State, Process Control Block, Threads; Process scheduling-	BOOK -1	BOOK -1

Multiprogramming, Scheduling Queues, CPU Scheduling, Context Switch; Operations on Processes- Creation and Termination of Processes; Inter process communication (IPC)- IPC Implementation Methods- Shared Memory and Message Passing; **CPU Scheduling:** Basic concepts; Scheduling Criteria; Scheduling Algorithms; Multiple-processor scheduling; Thread scheduling; Multiprocessor Scheduling; Real-Time CPU Scheduling	BOOK -1	Chapter 3: 3.1,3.2,3.3,3.4,3.5,3.6 (Page No:105-132) BOOK -1 Chapter 5:5.1,5.2,5,3,5.4,5.5(5.5.1, 5.5.2),5.6(5.6.1,5.6.2,5.6.3) (Page No:199-224,227-232)
UNIT 4[10 HOURS]		
Process Synchronization: Introduction; Race Condition; Critical Section Problem and Peterson's Solution; Synchronization Hardware, Semaphores; Classic Problems of Synchronization- Readers and Writers Problem, Dining Philosophers Problem; Monitors. **Deadlocks:** System Model; Deadlocks Characterization; Methods for Handling Deadlocks; Deadlock	BOOK -1 BOOK -1	BOOK -1 Chapter 6: 6.1,,6.2,6.3,6.4,6.5,6.6,6.7 (Page No:257-282) BOOK -1 Chapter 7:7.1.1,7.1.2,7.1.3 (Page No:289-294) BOOK -1 Chapter 8:8.1 to 8.8

Prevention; Deadlock Avoidance; Deadlock Detection; and Recovery from Deadlock. **Multithreaded Programming:** Introduction to Threads; Types of Threads; Multithreading- Definition, Advantages; Multithreading Models; Thread Libraries; Threading Issues.	BOOK -1	(Page No:317-343) BOOK -1 Chapter 4:4.1,4.2,4.3,4.4,4.6 (Page No:188-194)

Text Book:

1. Operating System Concepts, Silberschatz' et al., 10thEdition, Wiley, 2018.
2. Operating System Concepts, Silberschatz' et al., 6thEdition,

Reference Books:

1. Operating System Concepts - Engineering Handbook, Ghosh PK, 2019.
2. Understanding Operating Systems, McHoes A et al., 7th Edition, Cengage Learning, 2014.
3. Operating Systems - Internals and Design Principles, William Stallings, 9th Edition, Pearson.
4. Operating Systems – A Concept Based Approach, Dhamdhere, 3rd Edition, McGraw Hill Education India.
5. Modern Operating Systems, Andrew S Tanenbaum, 4th Edition, Pearson"Computing with C# and the .NET Framework", Arthur Gittleman, 2nd Edition, Jones & Bartlett Publishers, 2011

Course Title: Python Programming Concepts	Course Code:
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 02 Hours

Python Programming Concepts(OE)

Course Contents:

Topics	Book	Chapter /Page No/Section
UNIT 1[10 HOURS]		
Introduction to Python: Features of Python, Flavors of python, Python Virtual machine	Book 1, Chapter 1	1-7,10-12,14-15
Installing Python for windows, Writing and executing Python program.	Book 1, Chapter 2	19-38
Identifiers; Keywords; Statements and Expressions; Variables; Operators; Precedence and Association; Data Types; Indentation; Comments;	Book 2, Chapter 2	35-50
UNIT 2[10 HOURS]		
Input Output: Console Input and Console Output, Type Conversions; Type function and Is operator	Book 2, Chapter 2	50-58
Python Control Flow: Types of Control Flow; Control Flow Statements- if, else, elif, while loop, break, continue statements, for loop Statement;	Book 2, Chapter 3	67-83
Basics of arrays, working with Arrays using numpy	Book 1, Chapter 7	151-191
UNIT 3[11 HOURS]		
Strings: Creating and Storing Strings; Accessing String Characters; the str() function; Operations on Strings- Concatenation, Comparison, Slicing and Joining, Traversing; Format Specifiers;	Book 2, Chapter 5	119-143

Escape Sequences; Raw and Unicode Strings; Python String Methods; **Other data types-**lists, tuples and related functions	Book 1,Chapter 10	283-318
UNIT 4[11 HOURS]		
Python Functions: Built-in functions; commonly used modules, Function Definition- Syntax, Function Calling, Passing Parameters/arguments, the return statement; Default Parameters; Command line Arguments; Key Word Arguments;	Book 2, Chapter 4	95-113

Textbooks:

1. Dr. R. Nageshwara Rao, Core Python Programming, Second Addition, Dreamtech Press
2. Introduction to Python Programming, Gowrishankar S, Veena A et al., CRC Press, 2019.

Course Title: E-Commerce	
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 02 Hours

E-Commerce (OE)

Course Contents:

Topics	Book	Chapter /Page No/Section
UNIT 1[11 HOURS]		
Introduction to E-Commerce and Technology Infrastructure -Working of Web - HTML Markup for Structure - Creating simple page - Marking up text - Adding Links - Adding Images - Table Markup - Forms - HTML5**,** Building an E-Commerce Website, Mobile Site and Apps **Systematic approach to build an E-Commerce:** Planning, System Analysis, System Design, Building the system, Testing the system, Implementation and Maintenance, Optimize Web Performance – Choosing hardware and software – Other E-Commerce Site tools – Developing a Mobile Website and Mobile App	Reference Material BooK-1	3.2, 3.3,3.4,3.5,3.6 Pg No 182 to 186, 193 to 201, 206, 210 to 212, 218 to 225. Tables, charts, Fig. 3.5, 3.6, 3.7, 3.8, 3.9 Insights excluded.
UNIT 2[11 HOURS]		
E-Commerce Security and Payment Systems- E-Commerce Security Environment – Security threats in E-Commerce – Technology Solutions: Encryption, Securing Channels of Communication, Protecting Networks, Protecting Servers and Clients – Management Policies, Business Procedure and Public Laws - Payment Systems	Book-1	4.1,4.2,4.3,4.4,4.5 Pg No 240-242, 245- 252, 254-256, 259, 261 - 267, 271 to 273(encryption only), 281-282, 283-284(Protecting networks), 286, 287-289, 292-300. Tables, charts, Insights excluded.

UNIT 3[10 HOURS]		
Business Concepts in E-Commerce - Digital Commerce Marketing and Advertising strategies and tools – Internet Marketing Technologies – Social Marketing – Mobile Marketing – Location based Marketing – Ethical, Social, Political Issues in E-Commerce	Book-1	6.2,6.3,7.2,7.3,7.4,8.1 Pg No 387 to 398, 404(E-mail Marketing),406(Affiliate Marketing), 424-434, 467-470, 478(Twitter Marketing), 493, 509-511, 534-537 Tables, charts, Insights excluded.
UNIT 4[10 HOURS]		
Project Case Study- Case Study: Identify Key components, strategy, B2B, B2C Models of E-commerce Business model of any e-commerce website – Mini Project : Develop E-Commerce project in any one of Platforms like Woo-Commerce, Magento or Opencart	Book-1 Reference Material	5.1, 5.2, 5.3 Pg No 322-334, 337-350 Tables, charts, Insights excluded.

Text Book:

1. Kenneth C. Laudon, Carol Guercio Traver - E-Commerce 2016 business technology society, Pearson, 12th Edition

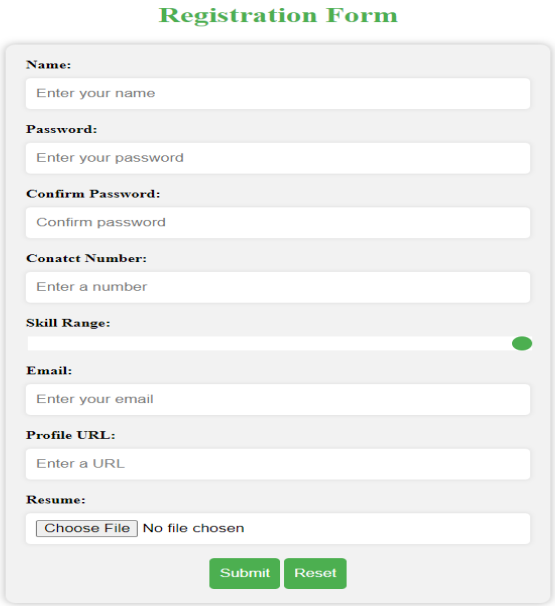
Reference Books:

1. http://docs.opencart.com/
2. http://devdocs.magento.com/
3. http://doc.prestashop.com/display/PS15/Developer+tutorials
4. Robbert Ravensbergen, ―Building E-Commerce Solutions with Woo Commerce‖, PACKT, 2nd Edition.

Course Title: Computer Multimedia & Animation Lab	Course code:
Total Contact Hours: 52	Course Credits: 02
Formative Assessment Marks: 25	Duration of SEE/Exam: 03 Hours
Summative Assessment Marks: 25	

LAB: Computer Multimedia & Animation
PART-A

1. Create a home page for a college website containg all latest HTML5 tags like <article>, <aside>, <nav>, <header>, <footer>, <section>, <figure>. And in <nav>. Create hyper links for courses, facilities and contact details. On clicking
    - Course hyperlink, display the page with course names offered in the college using ordered list,
    - Facilities hyperlink, display the page describing the facilities using unordered list
    - Contact hyperlink, display the page to show phone number, email and address in separate columns with respective headings.
2. Design a HTML5 web page containing form with text, password, number, range, email, url, file, submit and reset elements which must be styled using CSS3 according to following screen shot.

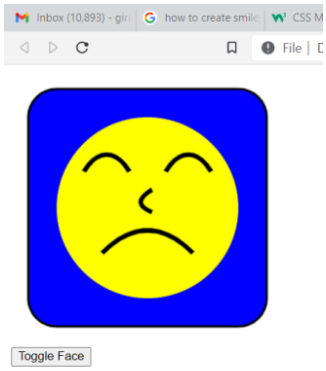


Note that:

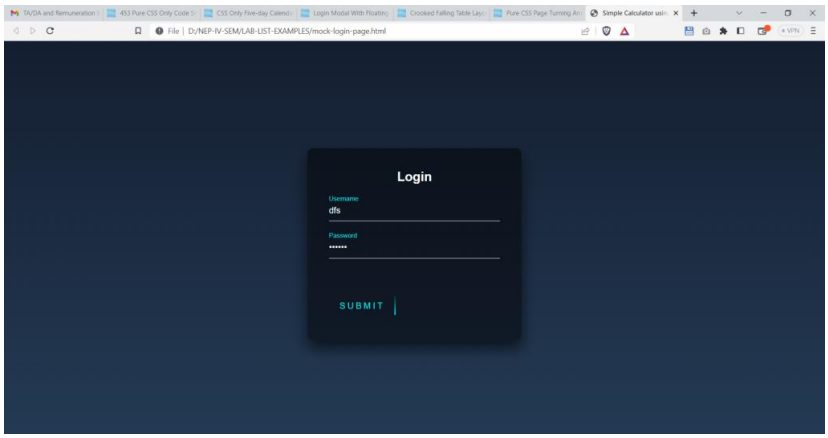
- Apply the style exactly same as shown in the above screen shot (with border radius, box shadow and colours).
- Submit and Reset buttons must change their colour on mouse hovering.
- Name and passwords should not be empty. If empty, provide error message when **submit** is clicked .
- When clicked on submit button email, Profile URLs must be validated for proper input.
- Contact number must contain only 10 digits not lesser and not more.
- Clicking on Reset button must clear all fields' entry.

3. Create an HTML5 web page which shows a smiling face initially. On every click of 'Toggle Face' button display should toggle between smiling face and sad face.

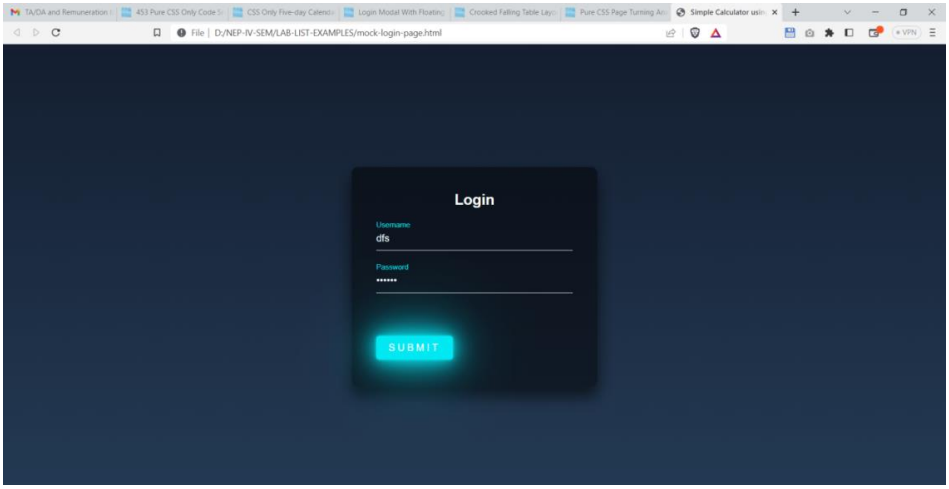
Note: Use only one button. And faces should be drawn using canvas element. Faces must be exactly like the following screen shots.



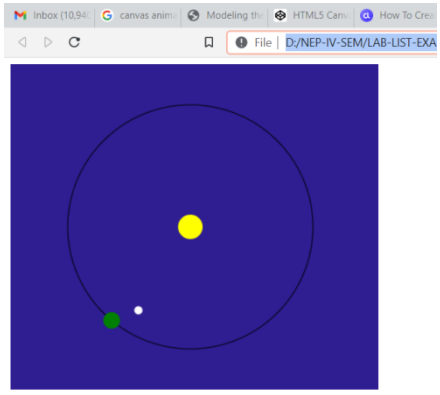
4. Design a mock login page and style it using CSS3. Initially login page should look like the following screen shot



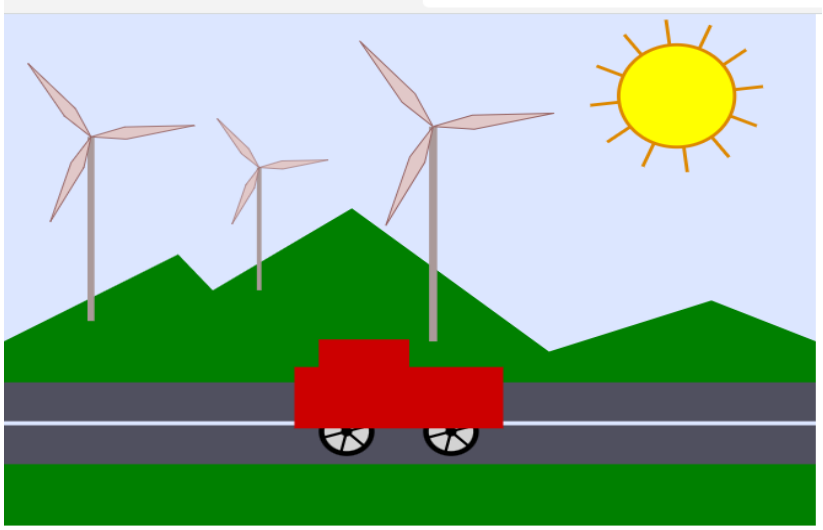
And while mouse is hovered on SUBMIT button it should look like



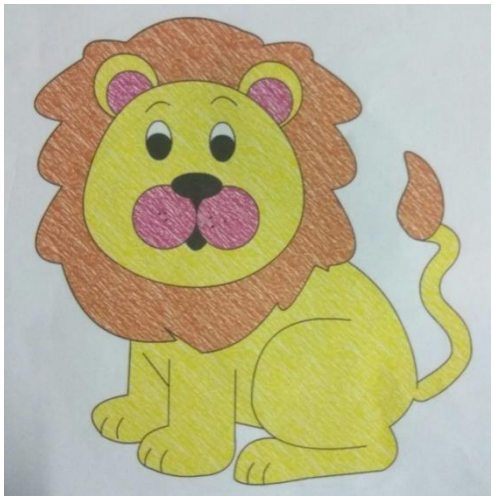
5. Create a web page to model solar system using canvas element animation, where it contains sun, earth and moon (all must be created using canvas shapes not images). Earth should revolve around sun and moon should revolve around earth simultaneously. Sample screen shot below:



6. Create the following drawing in html page using only SVG.



7. Create the following drawing using SVG



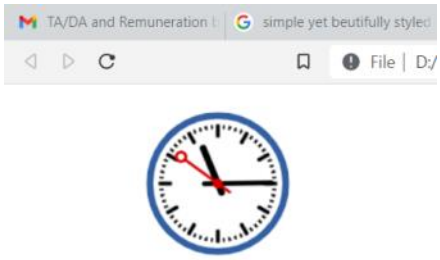
8. Create a web page using HTML and CSS to create a timetable as follows:

COLLEGE TIME TABLE

	8:30-9:30	9:30-10:30	10:30-11:30	11:30-12:30	12:30-2:00	2:00-3:00	3:00-4:00	4:00-5:00
MONDAY	---	SUB1	SUB2	SUB3	LUNCH	SUB4	SUB5	COUNSELLING CLASS
TUESDAY	SUB1	SUB2	SUB3	---		SUB2	SUB2	LIBRARY
WEDNESDAY	SUB1	SUB2	SWA	---		LAB		
THURSDAY	SUB1	SUB2	SUB3	---		SUB2	SUB2	LIBRARY
FRIDAY	SUB1	SUB2	SUB3	---		SUB4	SUB5	LIBRARY
SATURDAY	SUB1	SEMINAR				SUB4	SUB5	LIBRARY

PART-B

1. Create a web page using HTML5 canvas element to show a clock which changes time for every second, minute and hours (as that of an analog clock). Clock should have second, minute and hour needles and minute marking must be there (as shown in screen shot).

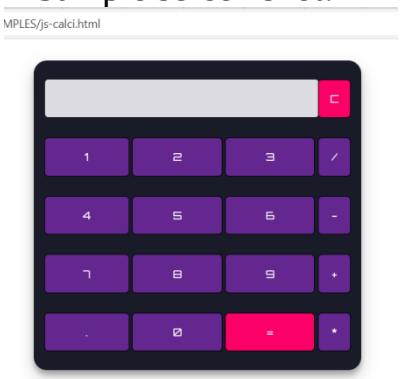


2. Create a web page containing simple calculator which should have basic arithmetic (+,-,*,/) operation on two floating point numbers and show result.

   Validations to be followed:

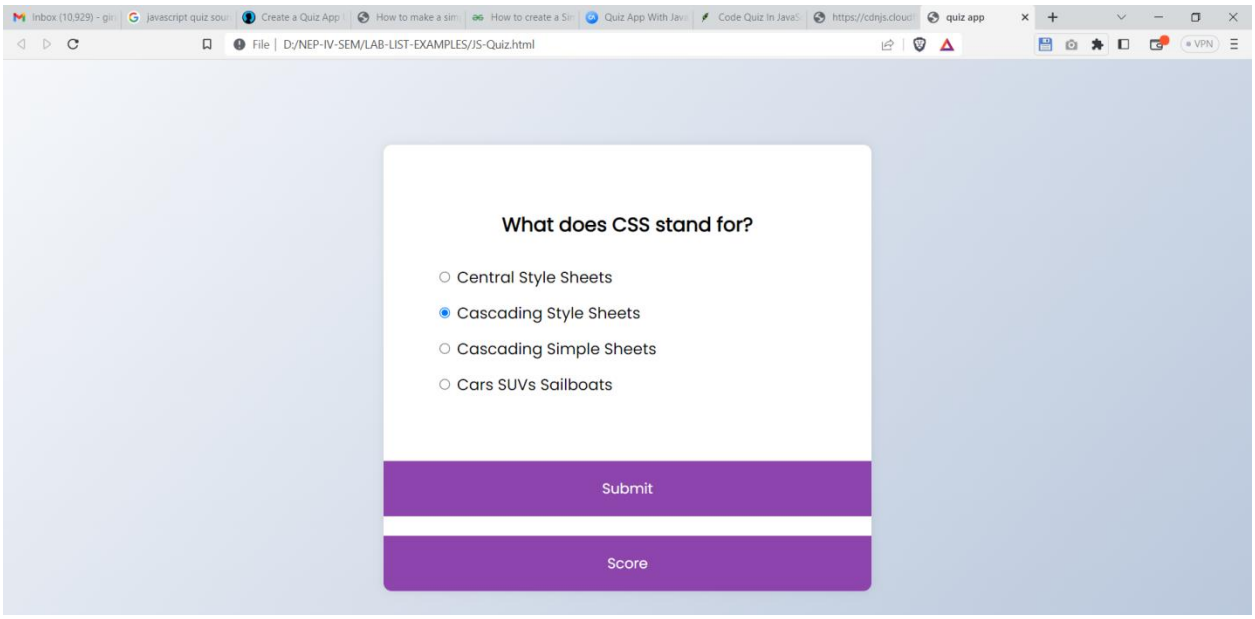
   - . (Decimal point) should be taken only once for an operand.
   - Operand can be negative.
   - Division by zero must be shown proper error message in result.

   Sample screen shot:



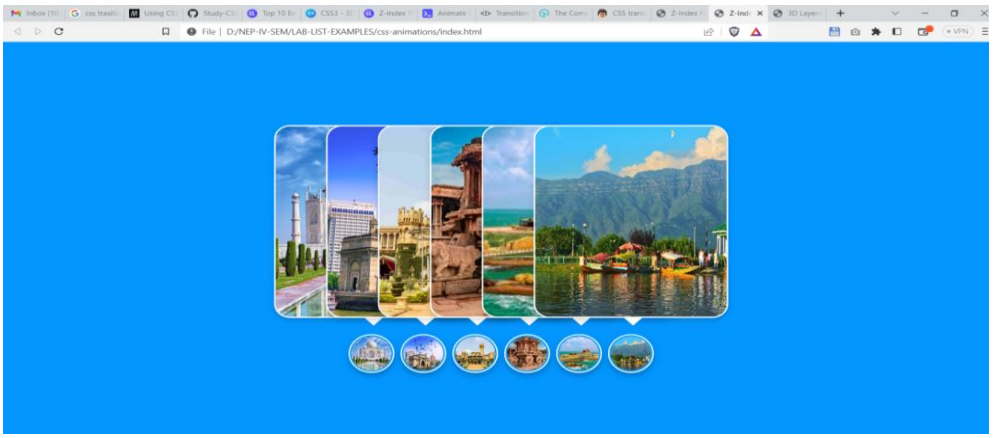
3. Create a HTML page make a quiz game where user should answer one question at a time, answers must be shown in radio buttons. Without submitting the answer, quiz should not move to next question (Minimum five questions must be there). When user wishes to get score (using score button) score should be displayed in alert

message. All the question must be loaded in same page (no page navigation is allowed) Sample screen shot:

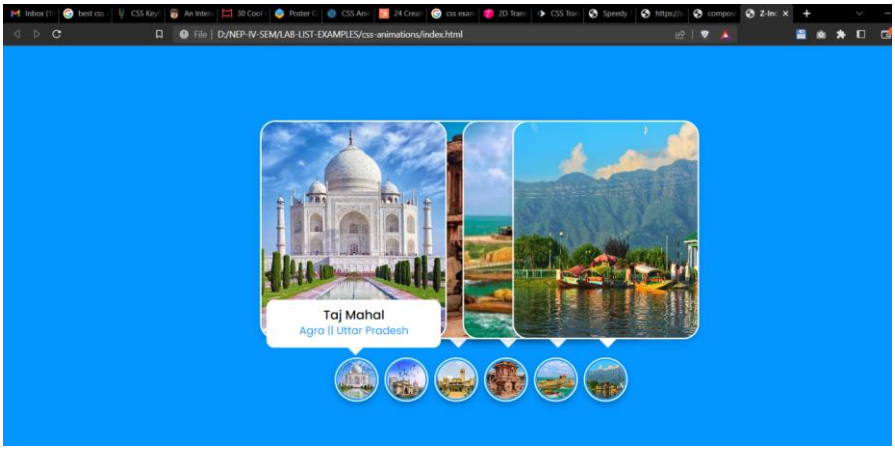


4. Create a web page using HTML/CSS which contains cards (shown as a stack of cards) with image of a tourist place and below that is a thumbnail (shown in circle with image). When mouse hovers over thumbnail, corresponding card comes in front and also small description about the tourist place will be displayed. Use ONLY CSS animation and transition. (Java script should not be used to animate.)

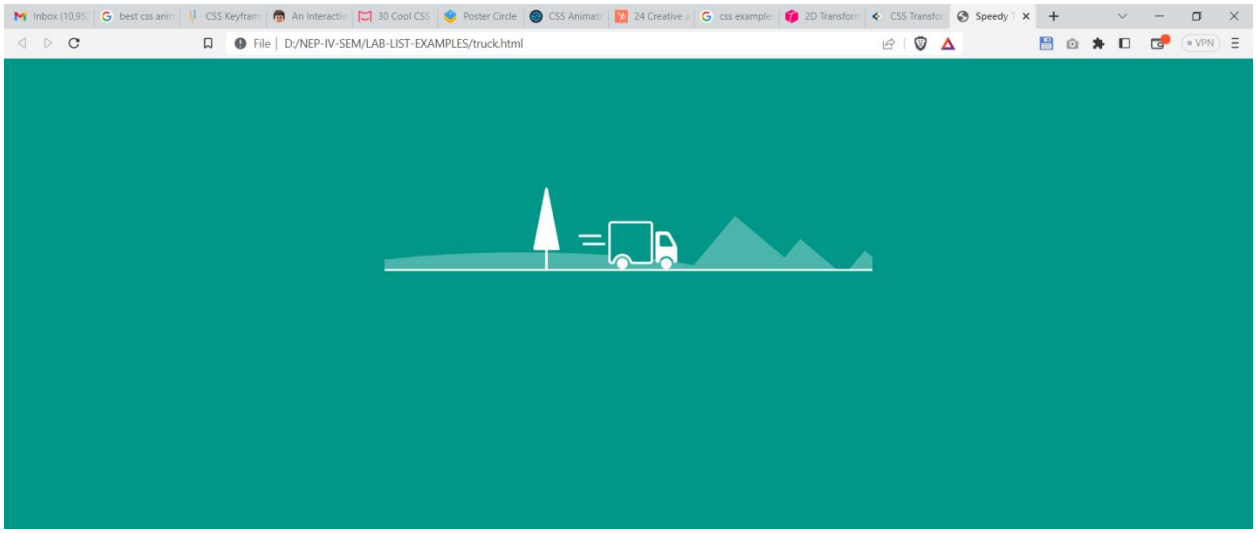
Initial interface:



Interface should look like below screenshot when mouse hovered on thumbnail:



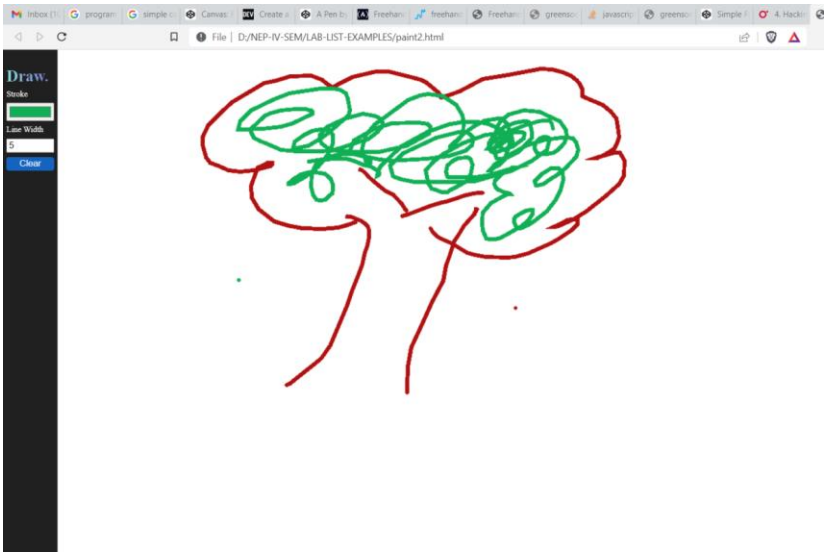
5. Create a web page using HTML5/CSS3 to animate a truck movement. While truck moves on mountains and trees should move in the back ground. Output screen shot:



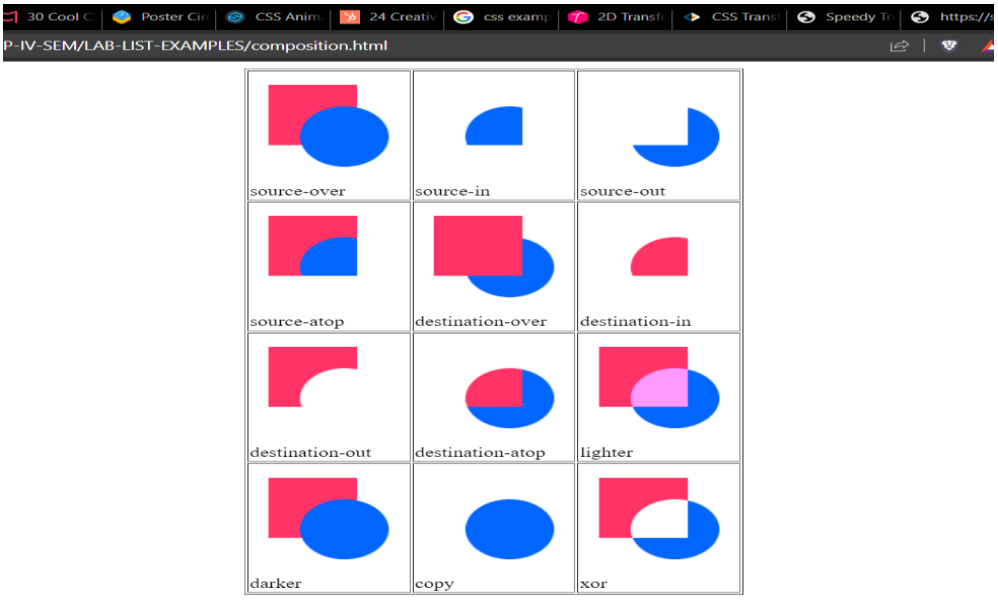
Background hills must be created using CSS only and for tree, truck and wheels download the images from the following URLs.
https://s3-us-west-2.amazonaws.com/s.cdpn.io/130015/tree.svg
https://s3-us-west-2.amazonaws.com/s.cdpn.io/130015/truck.svg
https://s3-us-west-2.amazonaws.com/s.cdpn.io/130015/wheels.svg

Animation must be implemented using ONLY CSS and Java script should not be used.

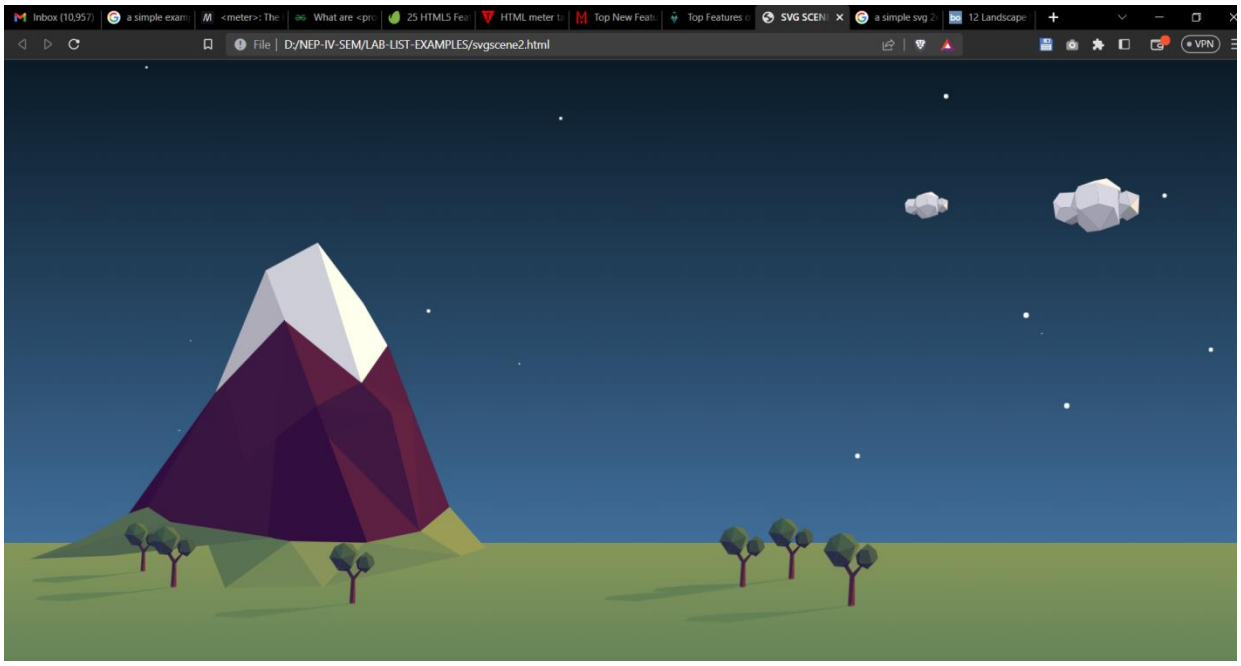
6. Create a simple paint app which draws lines based on the selected colour (chosen using color input) with selected thickness (chosen using number input) and there must be CLEAR button to clear the canvas. Sample screen shot:



7. Create web page using HTML5 canvas element to illustrate all canvas composition. Output must exactly look like the following screenshot:



8. Create a web page which must be as shown in below image using HTML5, SVG and CSS3. Here Mountain, trees and clouds must be drawn using SVG, Clouds must have bounce animation (css animation), and stars in sky changes their position randomly for every time page is loaded (java script can be used). Sky and stars must be created using <canvas> element.



Note: Online (live access) CSS files must be strictly avoided.

Scheme of Practical valuation:

Assessment Criteria		
Program-1	**PART-A** **Writing: 4 Marks Execution:4 Marks**	**08 Marks**
Program-2	**PART-B** **Writing:6 Marks Execution: 6 Marks**	**12 Marks**
Practical Record		**05 Marks**
Total		**25 Marks**

Course Title: Python Programming Lab	Course code:
Total Contact Hours: 52	Course Credits: 02
Formative Assessment Marks: 25	Duration of SEE/Exam: 03 Hours
Summative Assessment Marks: 25	

LAB: Python Programming
PART-A

1. Write a program create list with N elements. find all unique elements in the list. If an element is found only once in the list, then add that element to the unique list.

2. Program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.

3. Consider a tuple t1= (1,2,5,7,9,2,4,6,8,10). Write a program to perform following operations:
    a. Print half the values of tuple in one line and the other half in the next line.
    b. Print another tuple whose values are even numbers in the given tuple.
    c. Concatenate a tuple t2= (11,13,15) with t1.
    d. Return maximum and minimum value from this tuple.

4. Write a function that takes a sentence as input from the user and calculates the frequency of each letter. Use a variable of dictionary type to maintain the count.

5. Write a function nearly equal to test whether two strings are nearly equal. two strings a and b are nearly equal if one character change in b results in string a.

6. Write a program to create a text file and compute the number of characters, words and lines in a file.

7. Program using user defined exception class that will ask the user to enter a number until he guesses a stored number correctly. To help them figure it out, a hint is provided whether their guess is greater than or less than the stored number using user defined exceptions.
8. Write a Pandas program to join the two given data frames along rows. Sample Data frame may contain details of student like rollno , name , Total Marks.

PART B

1. Program to create a class Employee with empno, name, depname, designation, age and salary and perform the following function.
   i) Accept details of N employees
   ii) Search given employee using empno
   iii) Display employee details in neat format.

2. Write a program menu driven to create a BankAccount class. class should support the following methods for i) Deposit ii) Withdraw iii) GetBalanace . Create a subclass SavingsAccount class that behaves just like a BankAccount, but also has an interest rate and a method that increases the balance by the appropriate amount of interest.

3. Create a GUI to input Principal amount, rate of interest and number of years, Calculate Compound interest. When button submit is pressed Compound interest should be displayed in a textbox. When clear button is pressed all contents should be cleared.

4. Write a GUI program to implement Simple Calculator

5. Create a table student table (regno, name and marks in 3 subjects) using MySQL and perform the followings
   a. To accept the details of students and store it in database.
   b. To display the details of all the students
   c. Delete particular student record using regno.

6. Create a table employee (empno, name and salary) using MySQL and perform the followings
   a. To accept the details of employees and store it in database.
   b. To display the details of a specific employee
   c. To display employee details whose salary lies within a certain range

7. Create a table electricity_bill(TariffCode, Customer_Name, Meter Number, Previous_Reading and Current_Reading) using MySQL and perform the followings
   a. To accept the details of employees and store it in database.

b. To Update the Customer details by Meter Number.
c. Calculate Bill of Particular Customer using below criteria.

Tariff Code	Units Consumed	Rate/Unit
LT1	0-30	2.0
	31-100	3.5
	101-200	4.5
	Above 200	5.0
LT2	0-30	3.5
	31-100	5.0
	101-200	6.0
	Above 200	7.5

8. Consider following data and draw the bar graph using matplot library.(Use CSV or Excel).Add the data Using GUI.

Batsman	**2017**	**2018**	**2019**	**2020**
Virat Kohli	2501	1855	2203	1223
Steve Smith	2340	2250	2003	1153
Babar Azam	1750	2147	1896	1008
Rohit Sharma	1463	1985	1854	1638
Kane Williamson	1256	1785	1874	1974
Jos Butler	1125	1853	1769	1436

Display appropriate title for axis and chart. Also show legends.

Scheme of Practical valuation:

Assessment Criteria		
Program-1	**PART-A** **Writing: 4 Marks Execution: 4 Marks**	**8 Marks**
Program-2	**PART-B** **Writing:6 Marks Execution: 6 Marks**	**12 Marks**
Practical Record		**05 Marks**
Total		**25 Marks**