SCRIPTING LANGUAGES LAB

Course Code: ISL58	Credits: 0:0:2:0
Course Coordinator: Evangeline	Contact Hours: 14P, 14T

1a. Write Python code to do the following:

i. Create list with inputs from user

ii. Determine minimum and maximum elements in the list

iii. Insert new element into the list

iv. Delete an element from the list

v. Determine if an element is present in the list.

1b. **Python and JavaScript - ATM Application:** Design a HTML form that displays user's current balance, an input field to enter amount and buttons to withdraw or deposit money. Validate the form such that negative amount cannot be entered and Users cannot withdraw more than 5000 at one time. The maximum number of transactions is 5.

2a. Create a front end that allows the user to enter details of the item purchased (item name, item price (option), number of items bought). On clicking of the submit button, the total cost for the item purchased should be calculated and displayed. On clicking on the 'paid' button, appropriate alert box should be popped up.

2b. a) Load the 'Student Performance' dataset into one of the data structures (NumPy or Pandas).

b)Display header rows and description of the loaded dataset.

c) Remove unnecessary features (E.g. drop unwanted columns) from the dataset such as 'lunch' and 'test preparation course' .

d) Manipulate data by replacing empty column values in 'parental level of education' with a default value.

e) Perform the following visualization on the loaded dataset: Tally of the Number of Male &

Female students who took up the ‘test preparation course’ and those who did not.

3a. Create the details (name, native country, story title and publication year) of four authors as a JSON object. Display a web page displaying the details of

- First two authors in a tabular form using HTML Table Tag
- Other two authors as plain text.

3b. **Python File Handling & List Comprehension:** Write a python program to read contents of a file (filename as argument) and store number of occurrences of each word in a dictionary. Display the top 10 words with most number of occurrences in descending order. Store the length of each of these words in a list and display the list. Write a one-line reduce function to get the average length and one-line list comprehension to display squares of all odd numbers and display both.

4a. Write a python program to create a class ‘Rectangle’. This class should include a constructor to initialize the dimensions. Include a function in the class to compute the area of the rectangle. Create objects of the class and print area.

4b. **Python and JavaScript - Shopping Cart Application**: Design a simple Shopping Cart application which allows users to add items to their cart from a list of products. Allow users to view their cart (items and quantities of each) .

5a. Write a temperature converter python program, which is menu driven. Each such conversion logic should be defined in separate functions. The program should call the respective function based on the user’s requirement. The program should run as long as the user wishes so. Provide an option to view the conversions stored as list of tuples with attributes - from unit value, to unit value sorted by the user’s choice (from-value or to-value).

5b. Python for Data Science - Perform Data Visualization on Titanic Dataset
a) Load the Titanic dataset into one of the data structures (NumPy or Pandas).

b) Display header rows and description of the loaded dataset.
c) Remove unnecessary features (E.g. drop unwanted columns) from the dataset.
d) Manipulate data by replacing empty column values with a default value.
e)Perform the following visualization on the loaded dataset: Passenger status (Survived/Died) against Passenger Class

6a. Design a HTML form that displays Text boxes to indicate the 3 items purchased and the cost of each item. Validate the entry on server-side using Python to ensure that data entered in the text boxes are appropriate. In case of any errors, display appropriate messages on the web page. Else , calculate the total amount to be paid by the customer using Python on server-side and display the result.

6b. **Python Classes:** Write a python class to reverse a sentence (initialized via constructor) word by word. Example: "I am here" should be reversed as "here am I". Create instances of this class for each of the three strings input by the user and display the reversed string for each, in descending order of number of vowels in the string.

7a. Python for Data Science - Perform Data Visualization on Iris Dataset

a) Load the Iris dataset into one of the data structures (NumPy or Pandas).
b) Display header rows and description of the loaded dataset.

c) Clean the data if applicable

d) Find the average petal width of each category of IRIS Species

e) Data Visualization for: How many flowers of each species exists for each value of sepal width

7b. JSON JavaScript (JS): Dynamically loading JSON data - Implement a HTML+JS application that has a JSON Array with details of different kinds of data. Example: Model, Name, Price, Year. Display details of each vehicle dynamically by only showing details of the vehicle that the user has selected (via mouse-over).

8a. (**i)** Create a dictionary that contains the atomic element symbol and its name.

(ii) Add a unique & duplicate element into this dictionary by interacting with the user. Observe the output and justify it.

(iii) Display the number of atomic elements in this dictionary

(iv) Ask user to enter an element to search in the dictionary. Display appropriate results.

8b. JavaScript (JSON): Create two JSON objects. One contains the details of a 'Patient' as "name", "AadharNumber" and a JSON array which has the "lab-tests" the patient has taken. The other contains the 'Hospital' details as "hospital-name" and "location". Create a web page that displays the Hospital details when the page loads along with the text "Patient Details:" On mouse-hover the text "Patient Details:" changes colour and displays the details of the patient stored in the JSON object.

9a. Create a Python class called 'Student' having 'name', 'age' as attribute along with a list having the marks obtained for three subjects.

(i) Create a constructor to initialize two objects of this class.

(ii) Create a member function called 'display' printing the details of a specific object

(iii) Ask user to enter the values for an object through an 'accept' member function.

(iv) Display these details.

9b. **Python and DataScience**

a)Load the 'Black Friday' dataset into one of the data structures (NumPy or Pandas).

b)Display header rows and description of the loaded dataset.

c) Manipulate data by replacing empty column values in 'City_Category' with a default value for the city.

d) Rename the attribute 'City_Category' to have 'A' to be 'Metro Cities', 'B' to be 'Small Towns' , 'C' to be 'Villages'.

e) Perform the following visualization on the loaded dataset: Total Number of Male & Female persons belonging to each city category

10a. Create a list of 6 numbers. Use ‘list-comprehension’ to create a new list where each element in the original list is multiplied by 3. Use ‘lambda’ and ‘reduce’ function find the sum of the elements of the original list as well as the new list.

10b. **Python and JavaScript – Student Registration:** Design a HTML form that displays

- Two text fields to input the user’s USN and Date of Birth.
- Three text boxes to input three marks.

Validate the data entry on the server side using Javascript so that null values are not accepted for all the five text boxes. Validate the entry on server-side using Python to ensure that USN is accepted in a proper pattern as well as date validations are done.

Calculate the average using Python on server-side and display the result.

11a. Create the details (name, native country, story title and publication year) of four authors as a JSON object. Display a web page displaying the details of

- First two authors in a tabular form using HTML Table Tag .
- Other two authors as plain text.

11b. **Python and DataScience**

a) Load the ‘Student Performance’ dataset into one of the data structures (NumPy or Pandas).

b)Display header rows and description of the loaded dataset.

c) Remove unnecessary features (E.g. drop unwanted columns) from the dataset such as ‘lunch’ and ‘test preparation course’ .

d) Manipulate data by replacing empty column values in ‘parental level of education’ with a default value.

e) Perform the following visualization on the loaded dataset: Tally of the Number of Male & Female students who took up the ‘test preparation course’ and those who did not.

12a. Create a Python class called ‘Student’ having ‘name’, ‘age’ as attribute along with a list having the marks obtained for three subjects.

(i) Create a constructor to initialize two objects of this class.

(ii) Create a member function called ‘display’ printing the details of a specific object

(iii) Ask user to enter the values for an object through an ‘accept’ member function.

(iv) Display these details.

12b. **Python and JavaScript - ATM Application:** Design a HTML form that displays user’s current balance, an input field to enter amount and buttons to withdraw or deposit money. Validate the form such that negative amount cannot be entered and Users cannot withdraw more than 5000 at one time. The maximum number of transactions is 5.