Mid Term Exam Batch 9 Data Science & AI

Name:
profession:
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Attempt Any 8 Question

1-fruits = ['apple', 'banana', 'cherry', 'date']
(a) What does the method fruits.append('elderberry') do to the list?
(b) What does the method fruits.remove('banana') do to the list?
(c)What is the output of fruits.pop(2)? What will the list look like after this operation?

2- Write a Python script that asks the user for their name and age, stores them in variables, and then prints a message saying "Hello [name], you are [age] years old."
3- Write a Python script that checks if a number entered in a variable num by a user is positive, negative, or zero,or check if a user enter any invalid character and prints an appropriate message for each case.
4-operators like / and * take precedence over other operators like + and - as per mathematical conventions. You can use parentheses, i.e. (and), to specify the order in which operations are performed
2 ? 5 ? 17 ? 3 ? 4 ? 3

Answer : 1.53125

5- The diameter of a circle is 15 meters.
i-Calculate the area of a circle and assign the value to a variable name of area_of_circle
ii- Calculate the circumference of a circle and assign the value to a variable name of circum_of_circle
iii- Take diameter as user input and calculate the area.

6-A travel company wants to fly a plane to the Bahamas. Flying the plane costs 5000 dollars. So far, 29 people have signed up for the trip. If the company charges 200 dollars per ticket, what is the profit made by the company? Create variables for each numeric quantity and use appropriate arithmetic operations.

7-Write a Python program to create a **menu-driven calculator** that can perform the following operations:

1. **Addition**
2. **Subtraction**
3. **Multiplication**
4. **Factorial**
5. **Division**
6. **Exponentiation (Power)**
7. **Square Root**

Requirements:

- Display a menu of options for the user to choose from.
- Perform the selected operation based on the user's choice.
- Continue displaying the menu until the user chooses to exit.
- The program should handle the following:
    - For **factorial**, ensure the number is a non-negative integer.

- For **division**, handle division by zero and provide an error message if the user attempts to divide by zero.
- For **square root**, check for valid input (non-negative numbers).
- For **exponentiation**, calculate the power of a number.

8- Write a Python program that performs the following steps:

1. **Email Format Validation:**
   - Ask the user to enter their email address.
   - Verify if the email address is in a valid format (e.g., username@domain.com). You can use a regular expression to check the validity of the email format.
2. **Credentials Check:**
   - If the email format is valid, prompt the user to enter their username and password.
   - Check if the entered username and password match the stored credentials (hardcode a username and password for the purpose of this task).
   - If the credentials are correct, display a welcome message.
3. **Retry on Incorrect Password:**
   - If the password entered is incorrect, give the user one more chance to enter the correct password.
   - If the second attempt also fails, display a message indicating that the login has failed.

Username: ahmed@gmail.com
Password:ahmed@321

9- (a) Working with Tuples:

Consider the following tuple:

coordinates = (12.5, 45.8, 33.1)

i. Write a Python code snippet to unpack the values of the coordinates tuple into three variables: x, y, and z.

ii. Explain why tuples are generally preferred over lists for storing fixed sets of data.

(b) Working with Dictionaries:

student_scores = {'Ali': 85, 'Saima': 90, 'Kabeer': 78}

i. Write a Python code snippet to add a new student Ahmed with a score of 92 to the student_scores dictionary.

ii. Write a Python code snippet to update Kabeer's score to 82 in the student_scores dictionary.