Python Development

Assignment No. 1

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Deadline: 16th February, 12 PM

Important Note

This assignment must be completed individually. All your code should be uploaded on github using git commands. Any form of cheating, copying from the internet, or sharing solutions with classmates will result in disqualification. Use google, stackoverflow, w3schools and other helping materials.Do not use chatgpt or else your assignment will be marked as zero. Late submissions will not be accepted and will receive negative marking. Ensure that your code runs without errors before submission. Proper formatting, code commenting where necessary, and a structured approach are expected.

Submission

1. Upload your code on github using git commands.
2. Take screenshot of each step you do, starting from creation of git repo and so on.
3. Paste those screenshots on your assignment pdf that you will upload alongwith the theoretical questions/answers.
4. Paste your git repo link as well

Variables & Data Types

1. Declare three variables: an integer, a float, and a string. Print their types.
2. Convert a float num = 12.7 to an integer and a string. Print the results.
3. Convert x = '25' (a string) to an integer and a float. Print the results.
4. Check the datatype and mutability of given variables: a=10, b='Hello', c=3.14, etc.
5. Create a dictionary with variable names as keys and values as different datatypes.

Lists

1. Create a list of five fruits and print the second and last element.
2. Add a fruit at the start and end of the list, then print it.

3. Remove the third element from the list and print it.
4. Replace the second element in [10, 20, 30, 40, 50] with 25.
5. Concatenate two lists and print the result.
6. Extract elements from index 1 to 4 using slicing.
7. Create a list with an integer, string, and float. Print each element's type.

Tuples

1. Create a tuple with five city names and print first and last element.
2. Try modifying a tuple element. Explain the error,(if any).
3. Convert (10, 20, 30, 40, 50) into a list, modify an element, and convert back.
4. Check if 'purple' exists in a tuple.
5. Unpack ('Alice', 25, 'Doctor') into separate variables and print them.
7. Count occurrences of 5 in (1, 5, 2, 5, 3, 5, 4, 5).

Dictionaries

1. Store student info (name, age, grade) in a dictionary and print the grade.
2. Add a new key-value pair and print the updated dictionary.
3. Update the age in a student dictionary and print the result.
4. Create a phonebook dictionary and check if 'John' exists in it.
5. Remove a key from a dictionary and print the updated dictionary.
6. Convert a dictionary's keys into a list and print them.

Sets - Theoretical Questions

1. What is a set in Python? What are the advantages of using a set over a list?
2. Explain the difference between union and intersection in sets with examples.
3. What is a frozen set? How is it different from a normal set?
4. Can a set contain duplicate elements? Why or why not?
5. Explain how sets handle unordered data. Provide an example.

Sets - Practical Questions

1. Create a set with five unique numbers and print it.
2. Add an element to a set and remove an element from it. Print the result.
3. Create two sets and perform union, intersection, and difference operations.
4. Convert a list with duplicate values into a set and print the unique elements.

5. Check if a given element exists in a set and print an appropriate message.
6. Create a set of vowels and check if 'z' is present in the set or not.
7. Try adding a list as an element inside a set. What happens? Explain.
8. Convert a set into a sorted list and print the result.