# Week 3 - Hands On Exercise - Review Questions

ASD103A-21: Object-Oriented Data Structures using Python, Part1

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Question 1: Describe a set. Provide a code snippet with common operations.

A set in Python is like a collection of unique elements, meaning each element can appear only once in the set. It's handy when you want to store a bunch of items without worrying about duplicates. Here's is the code:

# Creating a set

my\_set = {1, 2, 3}

# Adding an element

my\_set.add(4)

# Adding a duplicate (won't change the set because sets ignore duplicates)

my\_set.add(4)

# Adding another element

my\_set.add(5)

# Removing an element

my\_set.remove(3)

# Printing the set

print("Current Set:", my\_set)

Question 2: Describe a dictionary. Provide a code snippet with common operations.

A dictionary in Python is like a fancy list, but instead of just storing values, it stores key-value pairs. Each key must be unique, and you can use it to look up its associated value. Here's a code snippet with common dictionary operations:

# Creating a dictionary

my\_dict = {'name': 'Alice', 'age': 25, 'city': 'Wonderland'}

# Accessing a value

print("Name:", my\_dict['name'])

# Adding a new key-value pair

my\_dict['gender'] = 'Female'

# Updating a value

my\_dict['age'] = 26

# Deleting a key-value pair

del my\_dict['city']

# Printing the dictionary

print("Current Dictionary:", my\_dict)

Question 3: Describe a hashing technique.

Hashing is like creating a unique ID for data. It takes input (like a piece of text or a number) and runs it through a hash function that turns it into a fixed-size string of characters, which is the hash value. The idea is that even a tiny change in the input should result in a totally different hash value. This technique is often used in data structures like hash tables to quickly locate a data record given its search key.

Question 4: Assume that the set s contains the number 3. Write the sequence of sets (for each line below) resulting from the following operations:

s.add(4)

s.add(4)

s.add(5)

s.remove(3)

After s.add(4): {3, 4}

After s.add(4) (ignoring duplicate): {3, 4}

After s.add(5): {3, 4, 5}

After s.remove(3): {4, 5}