**### Exercise 1: Create a Dictionary**

**# 1. Create a dictionary called person with the following key-value pairs:**

**# - Name: "Alice"**

**# - Age: 25**

**# - City: "New York"**

**# 2. Print the dictionary.**

person = {

"Name": "Alice",

"Age": 25,

"City": "New York"

}

print(person)

**### Exercise 2: Access Dictionary Elements**

**# 1. Access the value of the "Name" key in the person dictionary and print it.**

**# 2. Access the value of the "City" key and print it.**

print(person["Name"])

print(person["City"])

**### Exercise 3: Add and Modify Elements**

**# 1. Add a new key-value pair to the person dictionary: "email": "alice@example.com".**

**# 2. Change the value of the "Age" key to 26.**

**# 3. Print the modified dictionary.**

person["email"] = "alice@example.com"

person["Age"] = 26

print(person)

**### Exercise 4: Remove Elements**

**# 1. Remove the "City" key from the person dictionary.**

**# 2. Print the dictionary after removing the key.**

del person["City"]

print(person)

**### Exercise 5: Check if a Key Exists**

**# 1. Check if the key "email" exists in the person dictionary. Print a message based on the result.**

**# 2. Check if the key "phone" exists in the dictionary. Print a message based on the result.**

if "email" in person:

print("Exists ")

else:

print("Not exist")

if "phone" in person:

print("Exists")

else:

print("Not exist")

**### Exercise 6: Loop Through a Dictionary**

**# 1. Iterate over the person dictionary and print each key-value pair.**

**# 2. Iterate over the keys of the dictionary and print each key.**

**# 3. Iterate over the values of the dictionary and print each value.**

for key, value in person.items():

print(f"{key}: {value}")

for key in person.keys():

print(key)

for value in person.values():

print(value)

**### Exercise 7: Nested Dictionary**

**# 1. Create a dictionary called employees where the keys are employee IDs (101, 102, 103) and the values are dictionaries containing employee details (like name and job title). Example structure:**

**# python**

**# employees = {**

**# 101: {"name": "Bob", "job": "Engineer"},**

**# 102: {"name": "Sue", "job": "Designer"},**

**# 103: {"name": "Tom", "job": "Manager"}**

**# }**

**# 2. Print the details of employee with ID `102`.**

**# 3. Add a new employee with ID `104`, name `"Linda"`, and job `"HR"`.**

**# 4. Print the updated dictionary.**

employees = {

101: {"name": "Bob", "job": "Engineer"},

102: {"name": "Sue", "job": "Designer"},

103: {"name": "Tom", "job": "Manager"}

}

print(employees[102])

employees[104] = {"name": "Linda", "job": "HR"}

print(employees)

**### Exercise 8: Dictionary Comprehension**

**# 1. Create a dictionary comprehension that generates a dictionary where the keys are numbers from 1 to 5 and the values are the squares of the keys.**

**# 2. Print the generated dictionary.**

squares = {x: x\*\*2 for x in range(1, 6)}

print(squares)

**### Exercise 9: Merge Two Dictionaries**

**# 1. Create two dictionaries:**

**# python**

**# dict1 = {"a": 1, "b": 2}**

**# dict2 = {"c": 3, "d": 4}**

**# 2. Merge dict2 into dict1 and print the result.**

dict1 = {"a": 1, "b": 2}

dict2 = {"c": 3, "d": 4}

dict1.update(dict2)

print(dict1)

**### Exercise 10: Default Dictionary Values**

**# 1. Create a dictionary that maps letters to numbers: {"a": 1, "b": 2, "c": 3}.**

**# 2. Use the get() method to retrieve the value of key "b".**

**# 3. Use the get() method to try to retrieve the value of a non-existing key "d", but provide a default value of 0 if the key is not found.**

letter\_dict = {"a": 1, "b": 2, "c": 3}

print(letter\_dict.get("b"))

print(letter\_dict.get("d", 0))

**### Exercise 11: Dictionary from Two Lists**

**# 1. Given two lists:**

**# python**

**# keys = ["name", "age", "city"]**

**# values = ["Eve", 29, "San Francisco"]**

**# 2. Create a dictionary by pairing corresponding elements from the `keys` and `values` lists.**

**# 3. Print the resulting dictionary.**

keys = ["name", "age", "city"]

values = ["Eve", 29, "San Francisco"]

result = dict(zip(keys, values))

print(result)

**### Exercise 12: Count Occurrences of Words**

**# 1. Write a Python program that takes a sentence as input and returns a dictionary that counts the occurrences of each word in the sentence.**

**# python**

**# sentence = "the quick brown fox jumps over the lazy dog the fox"**

**# 2. Print the dictionary showing word counts.**

sentence = "the quick brown fox jumps over the lazy dog the fox"

words = sentence.split()

word\_count = {}

for word in words:

word\_count[word] = word\_count.get(word, 0) + 1

print(word\_count)