Brain Mentors
We Develop IT Brains

Dictionary Assignment

1. **Find the key with the maximum value in a dictionary.**
   Input: `{"a": 10, "b": 20, "c": 5}`
   Output: `Key with max value: b`

2. **Merge two dictionaries into one.**
   Input:
   ```
   dict1 = {"a": 1, "b": 2}
   dict2 = {"c": 3, "d": 4}
   ```
   Output: `{"a": 1, "b": 2, "c": 3, "d": 4}`

3. **Check if a key exists in a dictionary.**
   Input:
   ```
   dict = {"x": 100, "y": 200}
   key = "x"
   ```
   Output: `Key exists: True`

4. **Find the sum of all values in a dictionary.**
   Input: `{"a": 5, "b": 10, "c": 15}`
   Output: `Sum of values: 30`

5. **Remove a key from a dictionary.**
   Input:
   ```
   dict = {"name": "John", "age": 25}
   key_to_remove = "age"
   ```
   Output: `{"name": "John"}`

6. **Count the frequency of each character in a string using a dictionary.**
   Input: `"hello"`
   Output: `{'h': 1, 'e': 1, 'l': 2, 'o': 1}`

7. **Invert a dictionary (keys become values and values become keys).**
   Input: `{"a": 1, "b": 2, "c": 3}`
   Output: `{1: "a", 2: "b", 3: "c"}`

8. **Sort a dictionary by its values in ascending order.**
   Input: `{"x": 3, "y": 1, "z": 2}`
   Output: `{'y': 1, 'z': 2, 'x': 3}`

9. **Create a dictionary from two lists (keys and values).**
   Input:
   ```
   keys = ["name", "age", "city"]
   values = ["Alice", 25, "New York"]
   ```
   Output: `{"name": "Alice", "age": 25, "city": "New York"}`

10. **Add a key-value pair to a dictionary only if the key does not already exist.**
    Input:
    ```
    dict = {"a": 1, "b": 2}
    key = "c", value = 3
    ```
    Output: `{"a": 1, "b": 2, "c": 3}`

11. **Update the value of a specific key in a dictionary.**
    Input:
    ```
    dict = {"x": 10, "y": 20}
    key = "x", new_value = 15
    ```
    Output: `{"x": 15, "y": 20}`

12. **Find the common keys between two dictionaries.**
    Input:
    ```
    dict1 = {"a": 1, "b": 2}
    dict2 = {"b": 3, "c": 4}
    ```
    Output: `Common keys: {"b"}`

13. **Remove all key-value pairs where the value is None or empty.**
    Input: `{"a": 1, "b": None, "c": ""}`
    Output: `{"a": 1}`

14. **Get the top 3 highest values from a dictionary.**
    Input: `{"a": 10, "b": 40, "c": 20, "d": 50}`
    Output: `Top 3 values: [50, 40, 20]`

15. **Group a list of dictionaries by a common key.**
    Input:
    ```
    data = [{"name": "Alice", "age": 25}, {"name": "Bob", "age": 25},
    {"name": "Charlie", "age": 30}]
    ```
    Output:
    ```
    {25: [{"name": "Alice", "age": 25}, {"name": "Bob", "age": 25}],
    30: [{"name": "Charlie", "age": 30}]}
    ```