1. Categorizing Grades

You have a dictionary of students and their scores. Write a Python code snippet to create a new dictionary categorizing students as Pass (score >= 50) or Fail (score < 50).

students = {"Alice": 85, "Bob": 42, "Charlie": 78, "Diana": 30} # Create a dictionary `categories`

where the key is the student's name # and the value is either "Pass" or "Fail".

```python
def categorize_grades(students):
    categories = {name: "Pass" if score >= 50 else "Fail" for name, score in students.items()}
    return categories

students = {"Alice": 85, "Bob": 42, "Charlie": 78, "Diana": 30}
result = categorize_grades(students)
result
```

```
{'Alice': 'Pass', 'Bob': 'Fail', 'Charlie': 'Pass', 'Diana': 'Fail'}
```

2. Count Word Frequencies

Write a Python function that takes a string and returns a dictionary with the frequency of each word in the string. For example:

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

Output: {"the": 3, "quick": 1, "brown": 1, "fox": 2, "jumps": 1, "over": 1, "lazy": 1, "dog": 1}

```python
def count_word_frequencies(text):
    words = text.split()
    frequencies = {}
    for word in words:
        frequencies[word] = frequencies.get(word, 0) + 1
    return str(frequencies)

text = "the quick brown fox jumps over the lazy dog the fox"
result = count_word_frequencies(text)
result
```

```
'{'the': 3, 'quick': 1, 'brown': 1, 'fox': 2, 'jumps': 1, 'over': 1, 'lazy': 1, 'dog': 1}'
```

3. Find the Most Common Element

Given a dictionary of items and their quantities:

inventory = {"apples": 5, "bananas": 8, "oranges": 3, "pears": 8}

Write a Python function to find the item(s) with the highest quantity. For example:

Output: ["bananas", "pears"]

```
[6]  def find_most_common_element(inventory):
         max_quantity = max(inventory.values())
         most_common = [item for item, quantity in inventory.items() if quantity == max_quantity]
         return most_common

     inventory = {"apples": 5, "bananas": 8, "oranges": 3, "pears": 8}
     result = find_most_common_element(inventory)
     result
```

```
['bananas', 'pears']
```