Detailed Explanation of Python Code

This document provides a detailed explanation of the following Python code:

```python
counts = dict()
names = ['csev', 'cwen', 'zqian', 'cwen']
for name in names:
    if name not in counts:
        counts[name] = 1
    else:
        counts[name] = counts[name] + 1
print(counts)
```

1. Initialize an Empty Dictionary

The dictionary `counts` is initialized as an empty dictionary:

```python
counts = dict()
```

This dictionary will be used to store each name as a key and the count of its occurrences as the value.

2. List of Names

A list of names is created:

```python
names = ['csev', 'cwen', 'zqian', 'cwen']
```

This list contains four names: `csev`, `cwen`, `zqian`, and `cwen`. The goal is to count how many times each name appears.

3. Iterating Over the List

The `for` loop iterates over each name in the `names` list:

```python
for name in names:
```

The loop processes one name at a time.

4. Conditional Check for Existing Names

For each name, the following conditional check determines if the name is already in the dictionary:

```python
if name not in counts:
```

If the name is not present in the dictionary, the following code is executed:

```python
counts[name] = 1
```

This adds the name to the dictionary with a count of 1.

5. Incrementing the Count for Existing Names

If the name is already in the dictionary, the code in the `else` block is executed:

```python
else:
    counts[name] = counts[name] + 1
```

This increments the existing count by 1.

6. Printing the Final Dictionary

After the loop, the final dictionary is printed:

```python
print(counts)
```

7. Step-by-Step Walkthrough

First Iteration (name = 'csev')

- `csev` is not in the dictionary, so it is added with a count of 1. - Dictionary: `{'csev': 1}`

Second Iteration (name = 'cwen')

- `cwen` is not in the dictionary, so it is added with a count of 1. - Dictionary: `{'csev': 1, 'cwen': 1}`

Third Iteration (name = 'zqian')

- `zqian` is not in the dictionary, so it is added with a count of 1. - Dictionary: `{'csev': 1, 'cwen': 1, 'zqian': 1}`

Fourth Iteration (`name = 'cwen'`)

- `cwen` is already in the dictionary, so its count is incremented by 1. - Dictionary: {`'csev'`: 1, `'cwen'`: 2, `'zqian'`: 1}

Final Output

At the end, the final dictionary is:

```
{'csev': 1, 'cwen': 2, 'zqian': 1}
```

This shows that:

- `csev` appears 1 time.

- `cwen` appears 2 times.

- `zqian` appears 1 time.