

Hash Functions

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Hash Map

```
# Creating a hash table to store fruits based on their first letter
```

```
hash_table = {}
```

```
hash_table['A'] = 'Apple'
```

```
hash_table['B'] = 'Banana'
```

```
hash_table['O'] = 'Orange'
```

```
# Accessing a fruit based on its first letter
```

```
print(hash_table['A']) # Output: 'Apple'
```

```
print(hash_table['B']) # Output: 'Banana'
```

```
print(hash_table['O']) # Output: 'Orange'
```

h e l l o o w o r l d

Initial state (no characters processed yet)

Current counts: {}

Hash Set

Example regular set:

```
# Regular Set (Without Hashing)
my_set = {3, 7, 1, 9, 5}

# Searching for an element in the set
search_element = 7
if search_element in my_set:
    print("Element found in the set!")
else:
    print("Element not found in the set.")
```

Example hashset:

```
# Hash Set (With Hashing)
my_hash_set = set()

# Adding elements to the hash set
my_hash_set.add(3)
my_hash_set.add(7)
my_hash_set.add(1)
my_hash_set.add(9)
my_hash_set.add(5)

# Searching for an element in the hash set
search_element = 7
if search_element in my_hash_set:
    print("Element found in the hash set!")
else:
    print("Element not found in the hash set.")
```