7. Dictionary

1. Code, execute and debug programs to perform basic operations on Dictionary

1. Creation
2. Accessing & Updating
3. Removing

```
my_dict = {}
my_dict = {'name': 'Jack', 'age': 26}
print(my_dict)
print(my_dict['name'])
print(my_dict.get('age'))
print(my_dict.get('address'))
# update value
my_dict['age'] = 27
print(my_dict)
#To  add item
my_dict['address'] = 'Downtown'
print(my_dict)
#To  Removing elements
squares = {1: 1, 2: 4, 3: 9, 4: 16, 5: 25}
print(squares.pop(4))
print(squares)
print(squares.popitem())
print(squares)
# To remove all items
squares.clear()
print(squares)
del squares
```

Output:

```
{'name': 'Jack', 'age': 26}
Jack
26
None
{'name': 'Jack', 'age': 27}
{'name': 'Jack', 'age': 27, 'address': 'Downtown'}
16
{1: 1, 2: 4, 3: 9, 5: 25}
(5, 25)
{1: 1, 2: 4, 3: 9}
{}
```

2. Code, execute and debug programs to perform Dictionary indexing Iterating comprehension

1. Program to find the search key in the dictionary

```
dict1 = {'a': 1, 'b': 2, 'c': 3, 'd': 4}
search1= 'd'
print("The original dictionary is : " + str(dict1))
res = list(dict1.keys()).index(search1)
print("Index of search key is : " + str(res))
```

Output:

```
The original dictionary is : {'a': 1, 'b': 2, 'c': 3, 'd': 4}
Index of search key is : 3
```

2. Program to find index and value in the dictionary

```
dict1 = {'a': 1, 'b': 2, 'c': 3, 'd': 4}
keys_list = list(dict1)
a_key = keys_list[0]
print("the search index is " ,a_key)
values = dict1.values()
values_list = list(values)
a_value = values_list[3]
print("The search value is" ,a_value)
```

Output:

```
The search index is  a
The search value is 4
```

1. Access both key and value using items() using iteration

```
dict1 = {'name': 'Jack', 'age': 27, 'address': 'Downtown'}
for key, value in dict1.items():
    print(key, value)
```

Output:

```
name Jack
age 27
address Downtown
```

2. Access both key and value without using items() using iteration

```
dict1 = {'name': 'Jack', 'age': 27, 'address': 'Downtown'}
for key in dict1:
    print(key, dict1[key])
```

Output:

```
name Jack
age 27
address Downtown
```

3.Return keys or values explicitly using iteration

```
 dict1 = {'name': 'Jack', 'age': 27, 'address': 'Downtown'}
for key in dict1.keys():
    print(key)
for value in dict1.values():
    print(value)
```

Output:

```
name
age
address
Jack
27
Downtown
```

#Iteration

```
square_dict = dict()
for num in range(1, 11):
    square_dict[num] = num*num
print(square_dict)
```

Output:

{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 100}

#Same program using dictionary comprehension

```
 square_dict = {num: num*num for num in range(1, 11)}
print(square_dict)
```

Output:

{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 100}

#Program to find odd squares using dictionary comprehension

```
odd_squares = {x: x*x for x in range(11) if x % 2 == 1}
print(odd_squares)
```

Output:

{1: 1, 3: 9, 5: 25, 7: 49, 9: 81}