```python
In [1]:   1  dept_head = {"HR":'rajeev','AC':'ramesh','IT':'raman'}
          2  type(dept_head)
```

Out[1]: dict

```python
In [2]:   1  # accessing an elements from dictionary
```

```python
In [6]:   1  dept_head['HR'] # call dictionary elemnts using key name
```

Out[6]: 'rajeev'

```python
In [ ]:   1
```

```python
In [7]:   1  numbers = {1:'one',2:'two',3:'three',4:'four',5:'five'}
```

```python
In [8]:   1  # keys() = returns list of all keys present in my dictionary
          2  numbers.keys()
```

Out[8]: dict_keys([1, 2, 3, 4, 5])

```python
In [9]:   1  # values() = returns list of all values present in my dictionar
          2  numbers.values()
```

Out[9]: dict_values(['one', 'two', 'three', 'four', 'five'])

```python
In [10]:  1  # items() = returns list of tuple of key value pairs present in
          2
          3  numbers.items()
```

Out[10]: dict_items([(1, 'one'), (2, 'two'), (3, 'three'), (4, 'four'), (5,
         'five')])

```python
In [11]:  1  # update() = we can add new key value pair to our existing dict
          2  # ata time we can add multiple elements
          3  numbers.update({6:'six'})
          4  numbers
```

Out[11]: {1: 'one', 2: 'two', 3: 'three', 4: 'four', 5: 'five', 6: 'six'}

```python
In [14]:  1  # we can add a new element to dictionary by using new index[new
          2  # one by one
          3  numbers[7] = 'seven'
          4  numbers
```

Out[14]: {1: 'one', 2: 'two', 3: 'three', 4: 'four', 5: 'five', 6: 'six', 7
         : 'seven'}
```

```
In [17]:   1  # pop(n) = remove any dictionary item by specifying its key(n)
           2
           3  numbers.pop(1)
```

Out[17]: 'one'

```
In [18]:   1  numbers
```

Out[18]: {2: 'two', 3: 'three', 4: 'four', 5: 'five', 6: 'six', 7: 'seven'}

```
In [19]:   1  # popitem = removes last item from dictionary
           2
           3  numbers.popitem()
           4  numbers
```

Out[19]: {2: 'two', 3: 'three', 4: 'four', 5: 'five', 6: 'six'}

```
In [44]:   1  # get() = accessing elements
           2
           3  numbers.get(2)
```

Out[44]: 'two'

```
In [32]:   1  # adding multiple elements in dictionary
```

```
In [33]:   1  flowers = {}
```

```
In [34]:   1  flowers[2] = 'rose'
           2  flowers[1] = 'sunflower'
```

```
In [35]:   1  flowers
```

Out[35]: {2: 'rose', 1: 'sunflower'}

```
In [36]:   1  flowers[3] = 'lily'
           2  flowers[4] = 'lotus'
```

```
In [37]:   1  flowers
```

Out[37]: {2: 'rose', 1: 'sunflower', 3: 'lily', 4: 'lotus'}

```
In [38]:   1  flowers[3] = 'jasmin'
```

```
In [39]:   1  flowers
```

Out[39]: {2: 'rose', 1: 'sunflower', 3: 'jasmin', 4: 'lotus'}

```
In [ ]:    1
```

```python
In [45]:    # dictionary comprehension
```

```python
In [47]:    # Normal method

            sq_dict = dict()
            for i in range(1,11):
                sq_dict[i] = i*i

            print(sq_dict)
```

```
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 1
00}
```

```python
In [51]:    # dictionary comprehension
            square_dict = {i:i*i for i in range(1,11)}
            square_dict
```

```
Out[51]: {1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 1
00}
```

```python
In [ ]:
```

```python
In [72]:    keys = [1,2,3,4,5]
            values = ['abc','def','ghi','jkl','mno']
```

```python
In [73]:    combined = {x:y for (x,y) in zip(keys,values)}
            combined
```

```
Out[73]: {1: 'abc', 2: 'def', 3: 'ghi', 4: 'jkl', 5: 'mno'}
```

```python
In [ ]:
```

```python
In [76]:    l1 = [1,2,3]
            l2 = [4,5,6]
            l3 = []
            for i,j in zip(l1,l2):
                l3.append(i*j)
            l3
```

```
Out[76]: [4, 10, 18]
```

```python
In [81]:    l4 = []
            for i in range(len(l1)):
                a = l1[i]*l2[i]
                l4.append(a)

            l4
```

```
Out[81]: [4, 10, 18]
```

In [ ]: 1

In [ ]: 1

In [ ]: 1

In [ ]: 1

In [ ]: 1

In [ ]: 1