```
In [1]:   str="hello welcome you all"
```

```
In [2]:   print(str)
```
          hello welcome you all

```
In [3]:   str*2
```
Out[3]:   'hello welcome you allhello welcome you all'

```
In [4]:   str*4
```
Out[4]:   'hello welcome you allhello welcome you allhello welcome you allhello welcome you all'

```
In [5]:   len(str)
```
Out[5]:   21

```
In [6]:   str.find('hel')
```
Out[6]:   0

```
In [7]:   str.find('hello')
```
Out[7]:   0

```
In [8]:   str.find('come')
```
Out[8]:   9

```
In [9]:   str.find('welcome')
```
Out[9]:   6

```
In [10]:  str.find('cse')
```
Out[10]: -1

```
In [11]:  str.upper()
```
Out[11]: 'HELLO WELCOME YOU ALL'

```
In [12]:  str.lower()
```
Out[12]: 'hello welcome you all'

```
In [13]:  str[-3:]
```
Out[13]: 'all'

```
In [14]:  str[0::2]
```
Out[14]: 'hlowloeyual'

```
In [15]:  str in ['hello']
```

```
Out[15]:   False
```

```
In [16]:   'hello' in str
```

```
Out[16]:   True
```

```
In [18]:   str[2:len(str)-4+4-4+2-3*2-15]
```

```
Out[18]:   'llo welcome you a'
```

```
In [20]:   for i in range(1,25,2):
               print(i)
```

```
1
3
5
7
9
11
13
15
17
19
21
23
```

```
In [21]:   a=4
```

```
In [23]:   for i in range(1,25,a-2+4-3):
               print(i)
```

```
1
4
7
10
13
16
19
22
```

```
In [24]:   for i in range(5,101,5):
               print(i)
```

```
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
```

```python
In [25]: list1=[12,15,39.54,'hello',[12,23,25,13,[16,'welcome',72],'CSE']]
```

```python
In [26]: list1
Out[26]: [12, 15, 39.54, 'hello', [12, 23, 25, 13, [16, 'welcome', 72], 'CSE']]
```

```python
In [27]: list1[0]
Out[27]: 12
```

```python
In [28]: list1[3]
Out[28]: 'hello'
```

```python
In [37]: list1[4][1]
Out[37]: 23
```

```python
In [38]: list1[4][4]
Out[38]: [16, 'welcome', 72]
```

```python
In [31]: list1[4][4][1]
Out[31]: 'welcome'
```

```python
In [32]: list1[4][4][1][3:7]
Out[32]: 'come'
```

```python
In [36]: list1[4][5][1:]
Out[36]: 'SE'
```

s1='CSE'

str+s1

```python
In [42]: str+" "+s1
Out[42]: 'hello welcome you all CSE'
```

```python
In [43]: str.replace('welcome','come')
Out[43]: 'hello come you all'
```

```python
In [44]: l1
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_83948\2585568370.py in <module>
----> 1 l1

NameError: name 'l1' is not defined
```

```
In [45]:  list1

Out[45]:  [12, 15, 39.54, 'hello', [12, 23, 25, 13, [16, 'welcome', 72], 'CSE']]

In [46]:  list1.remove(0)

          ---------------------------------------------------------------------------
          ValueError                                Traceback (most recent call last)
          ~\AppData\Local\Temp\ipykernel_83948\4236470123.py in <module>
          ----> 1 list1.remove(0)

          ValueError: list.remove(x): x not in list

In [47]:  list1.remove(12)

In [48]:  list1

Out[48]:  [15, 39.54, 'hello', [12, 23, 25, 13, [16, 'welcome', 72], 'CSE']]

In [49]:  list1.pop(0)

Out[49]:  15

In [50]:  list1.pop(3,0)

          ---------------------------------------------------------------------------
          TypeError                                 Traceback (most recent call last)
          ~\AppData\Local\Temp\ipykernel_83948\843372585.py in <module>
          ----> 1 list1.pop(3,0)

          TypeError: pop expected at most 1 argument, got 2

In [53]:  list1[3].pop(0)

          ---------------------------------------------------------------------------
          IndexError                                Traceback (most recent call last)
          ~\AppData\Local\Temp\ipykernel_83948\2729065320.py in <module>
          ----> 1 list1[3].pop(0)

          IndexError: list index out of range

In [54]:  list1.add(12,1)

          ---------------------------------------------------------------------------
          AttributeError                            Traceback (most recent call last)
          ~\AppData\Local\Temp\ipykernel_83948\2191626227.py in <module>
          ----> 1 list1.add(12,1)

          AttributeError: 'list' object has no attribute 'add'

In [55]:  list1.append(12,1)

          ---------------------------------------------------------------------------
          TypeError                                 Traceback (most recent call last)
          ~\AppData\Local\Temp\ipykernel_83948\1354223345.py in <module>
          ----> 1 list1.append(12,1)

          TypeError: list.append() takes exactly one argument (2 given)

In [56]:  list1.insert(0,12)
```

Loading [MathJax]/extensions/Safe.js

```
In [57]:   list1
```

Out[57]:   `[12, 39.54, 'hello', [12, 23, 25, 13, [16, 'welcome', 72], 'CSE']]`

```
In [58]:   list1.remove(3)
```

```
In [60]:   list1.pop(3)
```

Out[60]:   `[12, 23, 25, 13, [16, 'welcome', 72], 'CSE']`

```
In [61]:   list1
```

Out[61]:   `[12, 39.54, 'hello']`

```
In [73]:   list1.append('welcome')
```

```
In [63]:   list1
```

Out[63]:   `[12, 39.54, 'hello', 'welcome']`

```
In [72]:   print(list1[1])

           39.54
```

```
In [70]:   str.split(' ',2)
```

Out[70]:   `['hello', 'welcome', 'you all']`

```
In [74]:   d={'name':'CSE','address':'chennai','mobile':123456789}
```

```
In [75]:   d
```

Out[75]:   `{'name': 'CSE', 'address': 'chennai', 'mobile': 123456789}`

```
In [76]:   d['name']
```

Out[76]:   `'CSE'`

```
In [77]:   len(d)
```

Out[77]:   `3`

```
In [78]:   d1=d.copy()
```

```
In [79]:   d1
```

Out[79]:   `{'name': 'CSE', 'address': 'chennai', 'mobile': 123456789}`

```
In [80]:   d.values()
```

Loading [MathJax]/extensions/Safe.js

```
Out[80]:  dict_values(['CSE', 'chennai', 123456789])

In [81]:  d.keys()

Out[81]:  dict_keys(['name', 'address', 'mobile'])

In [2]:  for i in range(1,20):
             print(i)

         1
         2
         3
         4
         5
         6
         7
         8
         9
         10
         11
         12
         13
         14
         15
         16
         17
         18
         19

In [3]:  for i in range(1,20,2):
             print(i)

         1
         3
         5
         7
         9
         11
         13
         15
         17
         19

In [4]:  for i in range(0,50,5):
             print(i)

         0
         5
         10
         15
         20
         25
         30
         35
         40
         45

In [5]:  for i in range(10):
             print("Hello Welcome")
```

```
Hello Welcome
Hello Welcome
Hello Welcome
Hello Welcome
Hello Welcome
Hello Welcome
Hello Welcome
Hello Welcome
Hello Welcome
Hello Welcome
```

In [17]:
```python
i=0
```

In [12]:
```python
while i<10:
    print("Hello Welcome")
    i+=1
```

In [13]:
```python
while i<10:
    print("Hello Welcome")
    i+=1
```

In [18]:
```python
while i<10:
    print("Hello Welcome")
    i+=1
    print("Thankyou")
```

```
Hello Welcome
Thankyou
Hello Welcome
Thankyou
Hello Welcome
Thankyou
Hello Welcome
Thankyou
Hello Welcome
Thankyou
Hello Welcome
Thankyou
Hello Welcome
Thankyou
Hello Welcome
Thankyou
Hello Welcome
Thankyou
Hello Welcome
Thankyou
```

In [19]:
```python
str="welcome"
```

In [20]:
```python
str
```

Out[20]:
```
'welcome'
```

In [21]:
```python
def func():
    print("Welcome")
    return
```

In [23]:
```python
func()
```

```
Welcome
```

In [24]:
```python
def func(s):
```

```
        return
```

In [25]:
```
func(str)
```

welcome

In [26]:
```
a=10
```

In [34]:
```
def func(s,a):
    #for i in range(a):
    print(s*a)
    return
```

In [35]:
```
func(str,a)
```

welcomewelcomewelcomewelcomewelcomewelcomewelcomewelcomewelcomewelcome

In [36]:
```
import numpy as np
```

In [37]:
```
a=np.array([1,2,3,4,5,6])
```

In [38]:
```
a
```

Out[38]: array([1, 2, 3, 4, 5, 6])

In [39]:
```
print(a)
```

[1 2 3 4 5 6]

In [40]:
```
a.ndim
```

Out[40]: 1

In [41]:
```
b=np.array([[1,2,3],[4,5,6],[7,8,9]])
```

In [42]:
```
b
```

Out[42]: array([[1, 2, 3],
               [4, 5, 6],
               [7, 8, 9]])

In [44]:
```
b.ndim
```

Out[44]: 2

In [45]:
```
c=np.arange(10,30)
```

In [46]:
```
c
```

Out[46]: array([10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26,
               27, 28, 29])

In [47]:
```
d=np.arange(10,30,2)
```

In [48]:
```
d
```

Out[48]: array([10, 12, 14, 16, 18, 20, 22, 24, 26, 28])

In [50]:
```
d.shape(2,5)
```

Loading [MathJax]/extensions/Safe.js

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_17712\659430181.py in <module>
----> 1 d.shape(2,5)

TypeError: 'tuple' object is not callable
```

In [51]: `x=np.empty([3,2],dtype=int)`

In [52]: `x`

Out[52]:
```
array([[10565744,       724],
       [       0,         0],
       [  131075,   4390973]])
```

In [53]: `x=np.zeros(10)`

In [54]: `x`

Out[54]:
```
array([0., 0., 0., 0., 0., 0., 0., 0., 0., 0.])
```

In [55]: `x=np.ones(10)`

In [56]: `x`

Out[56]:
```
array([1., 1., 1., 1., 1., 1., 1., 1., 1., 1.])
```

In [59]: `a=np.array([[1,2,3,4],[5,6,7,8],[9,10,11,12],[13,14,15,16]])`

In [60]: `a`

Out[60]:
```
array([[ 1,  2,  3,  4],
       [ 5,  6,  7,  8],
       [ 9, 10, 11, 12],
       [13, 14, 15, 16]])
```

In [61]: `str="welcome"`

In [62]: `str[2]`

Out[62]: `'l'`

In [63]: `str[3:]`

Out[63]: `'come'`

In [64]: `a`

Out[64]:
```
array([[ 1,  2,  3,  4],
       [ 5,  6,  7,  8],
       [ 9, 10, 11, 12],
       [13, 14, 15, 16]])
```

In [68]: `a[0]`

Out[68]: `array([1, 2, 3, 4])`

In [70]: `a[1:3]`

Out[70]:
```
array([[ 5,  6,  7,  8],
       [ 9, 10, 11, 12]])
```

Loading [MathJax]/extensions/Safe.js

```python
In [71]: a[2][2]

Out[71]: 11

In [72]: a[3][1:]

Out[72]: array([14, 15, 16])

In [73]: a

Out[73]: array([[ 1,  2,  3,  4],
               [ 5,  6,  7,  8],
               [ 9, 10, 11, 12],
               [13, 14, 15, 16]])

In [78]: a[:,0]

Out[78]: array([ 1,  5,  9, 13])

In [79]: a[:,2]

Out[79]: array([ 3,  7, 11, 15])

In [80]: a[:,2:4]

Out[80]: array([[ 3,  4],
               [ 7,  8],
               [11, 12],
               [15, 16]])

In [81]: a[1:3,0:3]

Out[81]: array([[ 5,  6,  7],
               [ 9, 10, 11]])

In [82]: b=a

In [83]: b

Out[83]: array([[ 1,  2,  3,  4],
               [ 5,  6,  7,  8],
               [ 9, 10, 11, 12],
               [13, 14, 15, 16]])

In [ ]:
```

Loading [MathJax]/extensions/Safe.js