```
In [3]:   #List
          #Dictionary
          #Tuple
          #Set

In [10]:  x = [[2], [3], [4]]
          y = [[5, 6, 7], [9, 10, 11]]
          z = x + y
          print(z)
```

[[2], [3], [4], [5, 6, 7], [9, 10, 11]]

```
In [11]:  import numpy as np

In [12]:  a = np.array(x)
          b = np.array(y)
          # print(type(a))
          print(a.shape)
          print(b.shape)
```

(3, 1)
(2, 3)

```
In [15]:  x = [[[1,2, 3]],[[4,5,6]],[[7,8,9]]]
          a = np.array(x)
          print(a.shape)
```

(3, 1, 3)

```
In [14]:  print(a)
```

[[[1 2 3]
  [4 5 6]]

 [[6 7 8]
  [9 10 11]]]

```
In [32]:  x = [[1,2,3],[4,5,6], [7,8,9]]
          y = [[1,2], [3,4], [5,6]]
          a = np.array(x)
          b = np.array(y)
          print(a)
          print(b)
```

[[1 2 3]
 [4 5 6]
 [7 8 9]]
[[1 2]
 [3 4]
 [5 6]]

```
In [29]:  print(a[1, 1:])
```

[5 6]

```
In [ ]:   #addition
          #subtraction
          #divison
          #multiplication - elementwis / dot

In [46]:  # c = a * a
          c = np.dot(a, b)
          print(c)
```

[[22 28]
 [49 64]
 [76 100]]

```
In [47]:  print(c.T)
```

[[22 49 76]
 [28 64 100]]

```
In [51]:  x = np.array([[1,2],[3,4]])
          y = np.linalg.inv(x)
```

```
dict_keys(['e', 'a', 'b', 'c', 'd', 'p',
'r'])
dict_values([5, 10, 40, 40, 3, 1, 1])
```

In [111...
```python
fig = plt.figure(figsize=(6,6))
plt.pie(x = grades.values(),
        labels = grades.keys(),
        colors = ['green', 'red', 'blue', 'orange', 'pink', 'black', 'violet'],
        explode = [0.5, 0.4, 0.3, 0.2, 0.1, 0.1, 0.1],
        shadow = True,
        labeldistance = 1.1
        )
plt.title("Grades", y=-0.2)
plt.legend()
plt.show()
fig.savefig("grade_pie.png")
```


Grades
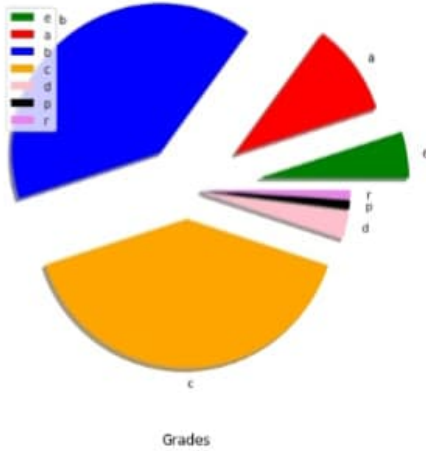
In [113...
```python
placement = {"2017":65, "2018":75, "2019": 80, "2020": 70, "2021": 90}
```

In [137...
```python
fig = plt.figure(figsize=(6,6))
plt.barh(y = list(placement.keys()),
        width = placement.values(),
        color = ['red', 'blue', 'pink', 'green', 'yellow'],
        edgecolor = ['black','black','black','black','black'],
        linewidth=3,
        )
plt.title("Placement percentage")
# plt.legend()
plt.show()
```


Placement percentage
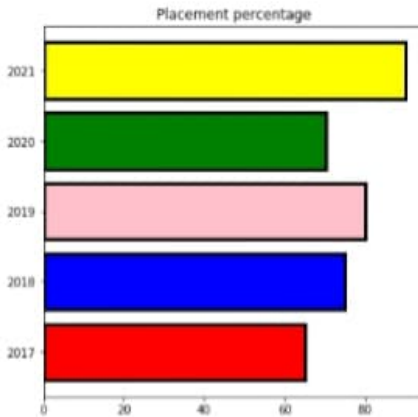
In [145...
```python
weight = np.random.randint(low=35, high=66, size=60)
```

In [146...
```python
weight
```

Out[146...
```
array([61, 60, 63, 42, 52, 44, 61, 46, 41,
59, 60, 45, 61, 45, 43, 54, 46,
       40, 40, 61, 65, 37, 37, 41, 41, 65,
57, 49, 63, 44, 50, 46, 40, 46,
       64, 45, 51, 39, 35, 60, 45, 41, 63,
48, 64, 47, 53, 60, 55, 50, 43,
       39, 43, 46, 59, 37, 51, 54, 43, 43])
```