Lab 7 exercises

Q1) sort the following key array in **heapsort algorithm** then make the same order to the values array

key = np.array([2, 2, 1, 1, 1])

values = np.array(['2:first', '2:second', '1:first', '1:second','1:third'])

output:

[4 2 3 1 0]

array(['1:third', '1:first', '1:second', '2:second', '2:first'], dtype='<U8')

Q2) create function that add values in sorted array without infect the order

np.array([15,8,5,4,6,9])

example:

insertfun(7)

arr

output:

array([4, 5, 6, 7, 9, 15])

Q3) create data frame as shown then change any one under 55 to w (warning)

	names	ids	GPAs
0	ahmed	120215568	89
1	mohammed	120216874	77
2	anas	120219874	52
3	foad	120214532	60
4	loay	120212258	58
5	gamal	120214521	54
6	saed	120217452	92

	names	ids	GPAs
0	ahmed	120215568	89
1	mohammed	120216874	77
2	w	w	w
3	foad	120214532	60
4	loay	120212258	58
5	w	w	w
6	saed	120217452	92

Q4) create DataFrame from the following dictionary then add the country column

sdata = {'cities': ['Paris', 'Marseille', 'Lyon', 'Toulouse', 'Strasbourg', 'Le Mans'],

'distance': ['1542.1', '8695.5', '2587.5', '1875.7', '5987.0', '11014.9'],}

	cities	distance	country
0	Paris	1542.1	paris
1	Marseille	8695.5	paris
2	Lyon	2587.5	paris
3	Toulouse	1875.7	paris
4	Strasbourg	5987.0	paris
5	Le Mans	11014.9	paris

Q5) Write a program to compare the elements of the two Pandas Series.

Sample Series: [2, 4, 6, 8, 10], [1, 3, 5, 7, 10]

Output:

```
Equals:
0    False
1    False
2    False
3    False
4     True
dtype: bool
Greater than:
0     True
1     True
2     True
3     True
4    False
dtype: bool
Less than:
0    False
1    False
2    False
3    False
4    False
dtype: bool
```

Q6) Write a Pandas program to convert the first column of a DataFrame as a Series.

{'col1': [1, 2, 3, 4, 7, 11], 'col2': [4, 5, 6, 9, 5, 0], 'col3': [7, 5, 8, 12, 1,11]}

Output:

```
Original DataFrame
   col1  col2  col3
0     1     4     7
1     2     5     5
2     3     6     8
3     4     9    12
4     7     5     1
5    11     0    11

1st column as a Series:
0     1
1     2
2     3
3     4
4     7
5    11
Name: col1, dtype: int64
<class 'pandas.core.series.Series'>
```