Create a 5X2 integer array from a range between 100 to 200 such that the difference between each element is 10

```
import numpy

print("Creating 5X2 array using numpy.arange")
sampleArray = numpy.arange(100, 200, 10)
sampleArray = sampleArray.reshape(5,2)
print (sampleArray)
```

```
Creating 5X2 array using numpy.arange
[[100 110]
 [120 130]
 [140 150]
 [160 170]
 [180 190]]
```

Exercise 3: Following is the provided numPy array. Return array of items by taking the third column from all rows

```
import numpy

sampleArray = numpy.array([[11 ,22, 33], [44, 55, 66], [77, 88, 99]])

print("Printing Input Array")

print(sampleArray)

print("\n Printing array of items in the third column from all rows")

newArray = sampleArray[...,2]
print(newArray)
```

```
Printing Input Array
[[11 22 33]
 [44 55 66]
 [77 88 99]]

 Printing array of items in the third column from all rows
[33 66 99]
```

Exercise 4: Return array of odd rows and even columns from below numpy array

```
import numpy

sampleArray = numpy.array([[3 ,6, 9, 12], [15 ,18, 21, 24],
[27 ,30, 33, 36], [39 ,42, 45, 48], [51 ,54, 57, 60]])
print("Printing Input Array")
print(sampleArray)

print("\n Printing array of odd rows and even columns")
```

```
newArray = sampleArray[::2, 1::2]
print(newArray)
```

```
Printing Input Array
[[ 3  6  9 12]
 [15 18 21 24]
 [27 30 33 36]
 [39 42 45 48]
 [51 54 57 60]]

 Printing array of odd rows and even columns
[[ 6 12]
 [30 36]
 [54 60]]
```

Exercise 5: Create a result array by adding the following two NumPy arrays. Next, modify the result array by calculating the square of each element

```
import numpy

arrayOne = numpy.array([[5, 6, 9], [21 ,18, 27]])
arrayTwo = numpy.array([[15 ,33, 24], [4 ,7, 1]])

resultArray  = arrayOne + arrayTwo
print("addition of two arrays is \n")
print(resultArray)

for num in numpy.nditer(resultArray, op_flags = ['readwrite']):
   num[...] = num*num
print("\nResult array after calculating the square root of all
elements\n")
print(resultArray)
```

```
addition of two arrays is

[[20 39 33]
 [25 25 28]]

Result array after calculating the square root of all elements

[[ 400 1521 1089]
 [ 625  625  784]]
```

Exercise 7: Sort following NumPy array

Case 1: Sort array by the second row

Case 2: Sort the array by the second column

```
import numpy
```

```
print("\nPrinting Original array\n")
sampleArray = numpy.array([[34,43,73],[82,22,12],[53,94,66]])
print (sampleArray)

sortArrayByRow = sampleArray[:,sampleArray[1,:].argsort()]
print("\nSorting Original array by secoond row\n")
print(sortArrayByRow)

print("\nSorting Original array by secoond column\n")
sortArrayByColumn = sampleArray[sampleArray[:,1].argsort()]
print(sortArrayByColumn)
```

```
Printing Original array

[[34 43 73]
 [82 22 12]
 [53 94 66]]

Sorting Original array by secoond row

[[73 43 34]
 [12 22 82]
 [66 94 53]]

Sorting Original array by secoond column

[[82 22 12]
 [34 43 73]
 [53 94 66]]
```