

```
In [1]: import numpy as np
arr1=np.array([1,2,3,4,5,6,7,8,9,10])
#extract elements greater than 5
extracted_elements=np.extract(arr1>5,arr1)
print("elemts greater than 5:" ,extracted_elements)
```

elemts greater than 5: [6 7 8 9 10]

```
In [3]: import numpy as np
Mark1=np.array([[98,87],[67,78]])
Mark2=np.array([[98,61]])
#Concatenate marks1 and mark2 alaong columns
result=np.concatenate((Mark1,Mark2),axis=0)
print(result)
```

```
[[98 87]
 [67 78]
 [98 61]]
```

```
In [11]: import numpy as np
Mark3=np.array([[98,87],[67,78]])
Mark4=np.array([[98,61],[56,76]])
#Concatenate marks1 and mark2 alaong columns
result1=np.concatenate((Mark3,Mark4),axis=1)
print(result1)
```

```
[[98 87 98 61]
 [67 78 56 76]]
```

```
In [12]: import numpy as np
num1=np.array([1,2,3])
num2=np.array([4,5,6])
#stack num1 and num2 vertically
result2=np.vstack((num1,num2))
print("vertically stacks array is:")
print(result2)
```

vertically stacks array is:

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

```
In [17]: import numpy as np
num3=np.array([10,76,98,23,45,15,97])
marks=(num3>10)&(num3<97)
iterated_array=num3[marks]
print("filterd array is: ",iterated_array)
```

filterd array is: [76 23 45 15]

```
In [19]: import numpy as np
sal=np.array([20000,30000,10000,50000,60000,4000,6000,7000])
E_salary=(sal>4000)&(sal<50000)
iterated_salary=sal[E_salary]
print("Required Salary is:",iterated_salary)
```

Required Salary is: [20000 30000 10000 6000 7000]

```
In [21]: import numpy as np
#sales data
sales_data=np.array([[101,450],[102,890],[103,650],[104,690],[105,777],[106,995]])
#sort the sales data in descending order
sorted_sales_data=sales_data[sales_data[:,1].argsort()[::-1]]
print("Top selling products:",sorted_sales_data)
```

```
Top selling products: [[106 995]
 [102 890]
 [105 777]
 [104 690]
 [103 650]
 [101 450]]
```

```
In [24]: import numpy as np
#name and email address
names=np.array(['Papa','Mummy','Me-','Chhaya-','Mini-'])
emails=np.array(['papa@gmail.com','mummy@gmail.com','me@gmail.com','chhaya@gmail.co
#joining names and email in vartically
Data=np.vstack((names,emails)).T
print("Data is:", Data)
```

```
Data is: [['Papa' 'papa@gmail.com']
 ['Mummy' 'mummy@gmail.com']
 ['Me-' 'me@gmail.com']
 ['Chhaya-' 'chhaya@gmail.com']
 ['Mini-' 'mini@gmail.com']]
```

```
In [31]: #Question 1
import numpy as np
# NumPy array with employee names and salaries
employees = np.array([
    ('Hema', 60000),
    ('Rekha', 45000),
    ('Jaya', 70000),
    ('Sushma', 40000),
    ('Babita', 55000)],
    dtype=[('Name', 'U10'), ('Salary', 'i4')])

# Filter employees with salary less than 50000
low_salary_employees = employees[employees['Salary'] < 50000]

# Display result
print("Employees with salary less than 50000:")
for emp in low_salary_employees:
    print(emp['Name'], "-", emp['Salary'])
```

```
Employees with salary less than 50000:
Rekha - 45000
Sushma - 40000
```

```
In [32]: #Question 2
import numpy as np

# Temperature dataset
temperatures = np.array([32.5, 34.2, 36.8, 29.3, 31.0, 38.7, 23.1, 18.5, 22.8, 37.2
```

```
# Identify hot days (> 35°C)
hot_days = temperatures[temperatures > 35]

# Identify cold days (< 5°C)
cold_days = temperatures[temperatures < 5]

# Display results
print("Hot Days Temperatures:", hot_days)
print("Cold Days Temperatures:", cold_days)
```

Hot Days Temperatures: [36.8 38.7 37.2]

Cold Days Temperatures: [4. -4. -12.]

```
In [33]: #Question 3
import numpy as np

# Monthly sales data (12 months)
monthly_sales = np.array([120, 135, 148, 165, 180, 155, 168, 190, 205, 198, 210, 225])

# Reshape into 4 quarters, contains 3 months each
quarterly_sales = monthly_sales.reshape(4, 3)

# Display the quarterly sales
print("Quarterly Sales Data:")
print(quarterly_sales)
```

Quarterly Sales Data:

```
[[120 135 148]
 [165 180 155]
 [168 190 205]
 [198 210 225]]
```

In []: