Practical - 7

AIM

Perform other matrix operations like converting matrix data to absolute values, taking the negative of matrix values, adding/removing rows/columns from a matrix, finding the maximum or minimum values in a matrix or in a row/column, and finding the sum of some/all elements in a matrix.

CODE & OUTPUT

In [2]:
```
import numpy as np
mat = np.array([[-1.2, 7, 4.9], [-6.5, -9.0, 1.4], [3.4, 5, 90], [-65.4, 12, 54]])
```

In [4]:
```
# finding absolute values of all elements in the matrix
print(np.absolute(mat))
```

```
[[ 1.2  7.   4.9]
 [ 6.5  9.   1.4]
 [ 3.4  5.  90. ]
 [65.4 12.  54. ]]
```

In [5]:
```
# finding negative of all matrix elements
print(np.negative(mat))
```

```
[[  1.2  -7.   -4.9]
 [  6.5   9.   -1.4]
 [ -3.4  -5.  -90. ]
 [ 65.4 -12.  -54. ]]
```

In [6]:
```
# sum of all elements in a matrix
print(np.sum(mat))
```

```
95.6
```

In [8]:
```
# maximum element in the matrix
print(np.amax(mat))
```

```
90.0
```

In [9]:
```
# minimum of element in the matrix
print(np.amin(mat))
```

```
-65.4
```

In [10]:
```
# minimum in row 0
print(np.amin(mat[0]))
```

```
-1.2
```

In [11]:
```
# maximum in row 0
print(np.amax(mat[0]))
```

```
7.0
```

In [12]:
```
# minimum in row 1
print(np.amin(mat[1]))

# maximum in row 1
print(np.amax(mat[1]))
```

```
-9.0
1.4
```

In [13]:
```
# minimum in row 2
print(np.amin(mat[2]))

# maximum in row 2
print(np.amax(mat[2]))
```

```
3.4
90.0
```

In [15]:
```
# delete a row fom the matrix
print(np.delete(mat, 1, 0))
```

```
[[ -1.2   7.    4.9]
 [  3.4   5.   90. ]
 [-65.4  12.   54. ]]
```

In [16]:
```
# delete a column from a matrix
print(np.delete(mat, 1, 1))
```

```
[[ -1.2   4.9]
 [ -6.5   1.4]
 [  3.4  90. ]
 [-65.4  54. ]]
```

In [17]:
```
# add a row to the matrix
arr = np.array([[1,2,3],[4,5,6]])
row = np.array([7,8,9])
arr = np.append(arr, [row], 0)
print(arr)
```

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

In [20]:
```
# add a column to the matrix
col = np.array([89,6,-2])
arr = np.column_stack((arr, col))
print(arr)
```

```
[[ 1  2  3 89]
 [ 4  5  6  6]
 [ 7  8  9 -2]]
```