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7. ## 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.

```
[37]
import numpy as np
A = np.array([[3, 6, 9], [5, -10, 15], [-7, 14, 21]])
B = np.array([[9, -18, 27], [11, 22, 33], [13, -26, 39]])
print("A = \n", A, "\nB = \n", B)
```

```
A =
 [[  3   6   9]
 [  5 -10  15]
 [ -7  14  21]]
B =
 [[  9 -18  27]
 [ 11  22  33]
 [ 13 -26  39]]
```

```
[38]
# Converting matrix A data to its absolute values
np.absolute(A)
```

```
array([[ 3,  6,  9],
       [ 5, 10, 15],
       [ 7, 14, 21]])
```

```
[39]
# Converting matrix B data to its negative values
np.negative(B)
```

```
array([[ -9,  18, -27],
       [-11, -22, -33],
       [-13,  26, -39]])
```

```
[40]
# Deleting a row from Matrix A
np.delete(A, 1, 0)
```

```
array([[ 3,  6,  9],
```

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```
[40]
# Deleting a row from Matrix A
np.delete(A, 1, 0)
```

```
array([[ 3,  6,  9],
       [-7, 14, 21]])
```

```
[41]
# Deleting a column from Matrix B
np.delete(B, 0, 1)
```

```
array([[-18,  27],
       [ 22,  33],
       [-26,  39]])
```

```
[42]
# Adding a row to Matrix A
np.append(A, np.array([[23, -45, 56]]), axis=0)
```

```
array([[  3,   6,   9],
       [  5, -10,  15],
       [ -7,  14,  21],
       [ 23, -45,  56]])
```

```
[43]
# Adding a column to Matrix B
np.append(B, [[23], [-45], [56]], axis=1)
```

```
array([[  9, -18,  27,  23],
       [ 11,  22,  33, -45],
       [ 13, -26,  39,  56]])
```

```
# Maximum of 2nd row of Matrix A
np.max(A, 0)[1]
```

Name - Khushi Chhatwani
College Roll no.- CSC/21/55
University Roll no. - 21059570021

```
[44]
# Maximum of 2nd row of Matrix A
np.max(A, 0)[1]

14

[45]
# Minimum of 2nd row of Matrix A
np.min(A, 0)[1]

-10

[46]
# Maximum of 3rd column of Matrix B
np.max(B, 1)[2]

39

[47]
# Minimum of 3rd column of Matrix B
np.min(B, 1)[2]

-26

[48]
# Sum of some elements of array
np.sum(A[1:, 1:])

40

# Sum of all elements of array
sumA = np.sum(A)
```

Name - Khushi Chhatwani
College Roll no.- CSC/21/55
University Roll no. - 21059570021

```
[45]
# Minimum of 2nd row of Matrix A
np.min(A, 0)[1]

...
-10

[46]
# Maximum of 3rd column of Matrix B
np.max(B, 1)[2]

...
39

[47]
# Minimum of 3rd column of Matrix B
np.min(B, 1)[2]

...
-26

[48]
# Sum of some elements of array
np.sum(A[1:, 1:])

...
40

[49]
# Sum of all elements of array
sumA = np.sum(A)
sumB = np.sum(B)
print('sumA = ', sumA, ', sumB = ', sumB)

...
sumA =  56 , sumB =  110
```