Q1

from numpy import random

import numpy as np

arr=random.randint(50,size=(4,2))

print(arr)

print("Array shape: ",arr.shape)

print("Dimensions: ",arr.ndim)

print("Size of each element  : ",arr.itemsize)

Output:

[[ 1 21]

[36 35]

[38 2]

[ 2 43]]

Array shape: (4, 2)

Dimensions: 2

Size of each element : 4

Q2

import numpy as np

from numpy import random

n=int(input("Enter number of elements : "))

arr=random.randint(10,91,size=(n,))

print(arr)

Output:

Enter number of elements : 6

[65 66 30 19 71 10]

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Q3

import numpy as np

from numpy import random

n=int(input("Enter number of elements : "))

arr=random.randint(1,50,size=n)

print(arr)

arr2=arr.reshape(4,3)

print(arr2)

Output:

Enter number of elements : 12

[ 8 42 17 32 15 20 34 14 25 34 11 15]

[[ 8 42 17]

[32 15 20]

[34 14 25]

[34 11 15]]

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Q4

import numpy as np

from numpy import random

arr=np.eye(3)

print(arr)

Output:

[[1. 0. 0.]

[0. 1. 0.]

[0. 0. 1.]]

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Q5

import numpy as np

from numpy import random

arr = random.randint(100,size=(3,3,3))

print(arr)

Output:

[[[96 5 21]

[34 0 68]

[ 2 51 72]]

[[ 9 49 55]

[ 3 62 86]

[32 42 32]]

[[62 0 95]

[21 27 21]

[81 70 46]]]

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Q6

import numpy as np

from numpy import random

arr = random.randint(50,size=(10,10))

print(arr)

print('Maximum value is :',arr.max())

print('Minimum value is :',arr.min())

Output:

[[ 0 2 31 31 12 38 11 15 25 0]

[13 14 46 22 13 36 14 19 18 2]

[25 19 14 18 47 2 15 7 38 25]

[ 2 17 17 17 6 42 5 21 9 35]

[34 8 21 3 14 6 28 25 47 33]

[20 26 2 40 11 44 46 12 17 1]

[14 9 41 13 33 32 9 42 22 40]

[46 3 9 43 16 29 41 46 39 27]

[43 23 13 28 21 46 5 30 37 18]

[ 0 38 6 37 32 27 5 4 33 16]]

Maximum value is : 47

Minimum value is : 0

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Q7

import numpy as np

from numpy import random

arr1 = random.randint(50, size=(10))

arr2 = random.randint(70, size=(10))

print(arr1)

print(arr2)

print('The common element is:',np.intersect1d(arr1,arr2))

Output:

[23 30 43 40 41 18 2 36 39 4]

[60 58 34 11 32 25 13 35 47 66]

The common element is: []

[35 40 2 18 41 13 35 26 45 34]

[54 36 34 20 12 7 68 66 46 66]

The common element is: [34]

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Q8

import numpy as np

from numpy import random

arr = random.randint(50,size=(4,4))

print('Array is: \n',arr)

print('reverse all rows: \n',arr[::-1])

print('reverse all columns: \n',arr[::,::-1])

print('reverse array: \n',arr[::-1,::-1])

print('swap two rows: ')

arr[[1,2],:] = arr[[2,1],:]

print(arr)

print('swap two columns: ')

arr[:,[1,2]] = arr[:,[2,1]]

print(arr)

Output:

Array is:

[[24 39 6 35]

[ 4 43 27 32]

[41 11 19 26]

[ 3 41 7 21]]

reverse all rows:

[[ 3 41 7 21]

[41 11 19 26]

[ 4 43 27 32]

[24 39 6 35]]

reverse all columns:

[[35 6 39 24]

[32 27 43 4]

[26 19 11 41]

[21 7 41 3]]

reverse array:

[[21 7 41 3]

[26 19 11 41]

[32 27 43 4]

[35 6 39 24]]

swap two rows:

[[24 39 6 35]

[41 11 19 26]

[ 4 43 27 32]

[ 3 41 7 21]]

swap two columns:

[[24 6 39 35]

[41 19 11 26]

[ 4 27 43 32]

[ 3 7 41 21]]

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Q9

import numpy as np

from numpy import random

arr1 = random.randint(50,size=(3,3))

print('Original array  :\n',arr1)

n = random.randint(1,9,size=1)

print('Each elemenet of \n',arr1,'\n will be multiplied by : ',n)

print('Array after multiplication is:\n',arr1\*n)

Output:

riginal array :

[[48 20 49]

[32 26 5]

[11 0 7]]

Each elemenet of

[[48 20 49]

[32 26 5]

[11 0 7]]

will be multiplied by : [5]

Array after multiplication is:

[[240 100 245]

[160 130 25]

[ 55 0 35]]

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Q10

import numpy as np

from numpy import random

arr1 = random.randint(100, size=(3,3))

print('matrix A is:\n',arr1)

arr2 = random.randint(100,size=(3,3))

print('matrix B is:\n',arr2)

print('Addition of matrix A and B is:\n',arr1+arr2)

print('Subtraction of matrix A and B is:\n',arr1-arr2)

print('Multiplication of matrix A and B is:\n',arr1\*arr2)

print('Transpose of matrix A is:\n',arr1.transpose())

print('Transpose of matrix B is:\n',arr2.transpose())

Output:

matrix A is:

[[61 63 90]

[29 26 14]

[75 92 32]]

matrix B is:

[[12 77 96]

[29 32 35]

[23 36 68]]

Addition of matrix A and B is:

[[ 73 140 186]

[ 58 58 49]

[ 98 128 100]]

Subtraction of matrix A and B is:

[[ 49 -14 -6]

[ 0 -6 -21]

[ 52 56 -36]]

Multiplication of matrix A and B is:

[[ 732 4851 8640]

[ 841 832 490]

[1725 3312 2176]]

Transpose of matrix A is:

[[61 29 75]

[63 26 92]

[90 14 32]]

Transpose of matrix B is:

[[12 29 23]

[77 32 36]

[96 35 68]]

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