

10.

```
In [6]: import numpy as np
arr1=np.full((10,10),4)
print("arr1: ",arr1)
print("arr2: ",arr2)
arr2=np.arange(1,101).reshape(10,10)
mult_res=arr1*arr2
print("Mult Result: ",mult_res)

arr1: [[4 4 4 4 4 4 4 4 4 4]
 [4 4 4 4 4 4 4 4 4 4]
 [4 4 4 4 4 4 4 4 4 4]
 [4 4 4 4 4 4 4 4 4 4]
 [4 4 4 4 4 4 4 4 4 4]
 [4 4 4 4 4 4 4 4 4 4]
 [4 4 4 4 4 4 4 4 4 4]
 [4 4 4 4 4 4 4 4 4 4]
 [4 4 4 4 4 4 4 4 4 4]
 [4 4 4 4 4 4 4 4 4 4]]
arr2: [[ 1  2  3  4  5  6  7  8  9 10]
 [11 12 13 14 15 16 17 18 19 20]
 [21 22 23 24 25 26 27 28 29 30]
 [31 32 33 34 35 36 37 38 39 40]
 [41 42 43 44 45 46 47 48 49 50]
 [51 52 53 54 55 56 57 58 59 60]
 [61 62 63 64 65 66 67 68 69 70]
 [71 72 73 74 75 76 77 78 79 80]
 [81 82 83 84 85 86 87 88 89 90]
 [91 92 93 94 95 96 97 98 99 100]]
Mult Result: [[ 4  8 12 16 20 24 28 32 36 40]
 [44 48 52 56 60 64 68 72 76 80]
 [84 88 92 96 100 104 108 112 116 120]
 [124 128 132 136 140 144 148 152 156 160]
 [164 168 172 176 180 184 188 192 196 200]
 [204 208 212 216 220 224 228 232 236 240]
 [244 248 252 256 260 264 268 272 276 280]
 [284 288 292 296 300 304 308 312 316 320]
 [324 328 332 336 340 344 348 352 356 360]
 [364 368 372 376 380 384 388 392 396 400]]
```

11.

```
In [9]: import numpy as np
arr=np.array([list(range(10,-1,2)),list(range(0,11,2))])
print("Array: ",arr)

Array: [list([]) list([0, 2, 4, 6, 8, 10])]
```

12.

OUTPUT

[10 8 6 4 2 0 0 2 4 6 8 10]

a is

[10 10 6 4 2 0 0 2 4 6 8 10]

an is

[[10, 8, 6, 4, 2, 0], [0, 2, 4, 6, 8, 10]]

[10 8 6 4 2 0 0 2 4 6 8 10]

a is

[10 10 6 4 2 0 0 2 4 6 8 10]

an is

[[10, 10, 6, 4, 2, 0], [0, 2, 4, 6, 8, 10]]

13.

```
In [16]: import pandas as pd
df=pd.read_csv("https://raw.githubusercontent.com/cs109/2014_data/master/countries.csv")
df
```

Out[16]:

	Country	Region
0	Algeria	AFRICA
1	Angola	AFRICA
2	Benin	AFRICA
3	Botswana	AFRICA
4	Burkina	AFRICA
...
189	Paraguay	SOUTH AMERICA
190	Peru	SOUTH AMERICA
191	Suriname	SOUTH AMERICA
192	Uruguay	SOUTH AMERICA
193	Venezuela	SOUTH AMERICA

194 rows × 2 columns

14.

```
In [18]: import pandas as pd
df=pd.read_csv("titanic.csv")
df.head()
```

Out[18]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	NaN	S
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C85	C
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	NaN	S
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123	S
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	NaN	S

15.

```
In [20]: import pandas as pd
df=pd.read_csv("titanic.csv")
df.describe()
```

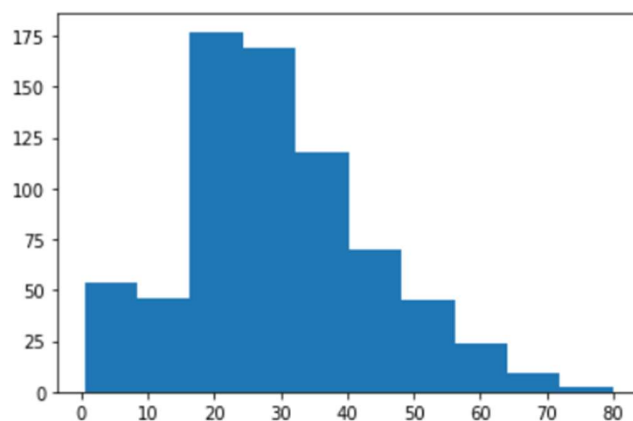
Out[20]:

	PassengerId	Survived	Pclass	Age	SibSp	Parch	Fare
count	891.000000	891.000000	891.000000	714.000000	891.000000	891.000000	891.000000
mean	446.000000	0.383838	2.308642	29.699118	0.523008	0.381594	32.204208
std	257.353842	0.486592	0.836071	14.526497	1.102743	0.806057	49.693429
min	1.000000	0.000000	1.000000	0.420000	0.000000	0.000000	0.000000
25%	223.500000	0.000000	2.000000	20.125000	0.000000	0.000000	7.910400
50%	446.000000	0.000000	3.000000	28.000000	0.000000	0.000000	14.454200
75%	668.500000	1.000000	3.000000	38.000000	1.000000	0.000000	31.000000
max	891.000000	1.000000	3.000000	80.000000	8.000000	6.000000	512.329200

16

```
In [27]: import matplotlib.pyplot as plt
import pandas as pd
df=pd.read_csv("titanic.csv")
plt.hist(df["Age"])
```

Out[27]: (array([54., 46., 177., 169., 118., 70., 45., 24., 9., 2.]),
array([0.42 , 8.378, 16.336, 24.294, 32.252, 40.21 , 48.168, 56.126,
64.084, 72.042, 80.]),
<BarContainer object of 10 artists>)



17(a)

```
In [33]: import pandas as pd
import matplotlib.pyplot as plt
df=pd.read_csv("iris.csv")
df.head()
```

```
Out[33]:
```

	sepal.length	sepal.width	petal.length	petal.width	variety
0	5.1	3.5	1.4	0.2	Setosa
1	4.9	3.0	1.4	0.2	Setosa
2	4.7	3.2	1.3	0.2	Setosa
3	4.6	3.1	1.5	0.2	Setosa
4	5.0	3.6	1.4	0.2	Setosa

```
In [34]: df.tail()
```

```
Out[34]:
```

	sepal.length	sepal.width	petal.length	petal.width	variety
145	6.7	3.0	5.2	2.3	Virginica
146	6.3	2.5	5.0	1.9	Virginica
147	6.5	3.0	5.2	2.0	Virginica
148	6.2	3.4	5.4	2.3	Virginica
149	5.9	3.0	5.1	1.8	Virginica

17(b)

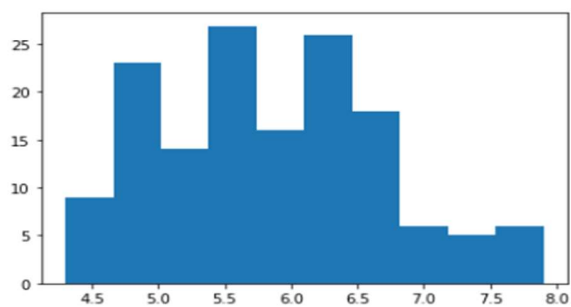
```
In [35]: df.describe()
```

```
Out[35]:
```

	sepal.length	sepal.width	petal.length	petal.width
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.057333	3.758000	1.199333
std	0.828066	0.435866	1.765298	0.762238
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

```
In [36]: plt.hist(df["sepal.length"])
```

```
Out[36]: (array([ 9., 23., 14., 27., 16., 26., 18.,  6.,  5.,  6.]),
array([4.3 , 4.66, 5.02, 5.38, 5.74, 6.1 , 6.46, 6.82, 7.18, 7.54, 7.9 ]),
<BarContainer object of 10 artists>)
```



18(a).

```
In [37]: import pandas as pd
import matplotlib.pyplot as plt
df=pd.read_csv("diamonds.csv")
df.head()
```

Out[37]:

	Unnamed: 0	carat	cut	color	clarity	depth	table	price	x	y	z
0	1	0.23	Ideal	E	SI2	61.5	55.0	326	3.95	3.98	2.43
1	2	0.21	Premium	E	SI1	59.8	61.0	326	3.89	3.84	2.31
2	3	0.23	Good	E	VS1	56.9	65.0	327	4.05	4.07	2.31
3	4	0.29	Premium	I	VS2	62.4	58.0	334	4.20	4.23	2.63
4	5	0.31	Good	J	SI2	63.3	58.0	335	4.34	4.35	2.75

```
In [39]: pd.Series.describe(df["cut"])
```

Out[39]: count 53940
unique 5
top Ideal
freq 21551
Name: cut, dtype: object

```
In [40]: pd.Series.describe(df["color"])
```

Out[40]: count 53940
unique 7
top G
freq 11292
Name: color, dtype: object

18(b)

```
In [41]: pd.Series(df["clarity"])
```

Out[41]: 0 SI2
1 SI1
2 VS1
3 VS2
4 SI2
...
53935 SI1
53936 SI1
53937 SI1
53938 SI2
53939 SI2
Name: clarity, Length: 53940, dtype: object

```
In [43]: df.hist(figsize=(10,10))
plt.tight_layout()
plt.show()
```

