SUMESH R - 20104169

Basic Analysis using NumPy and Pandas

Import Libraries

In [1]:
```
import pandas as pd
```

In [2]:
```
import numpy as np
```

Import Dataset

In [3]:
```
data = pd.read_csv("8_BreastCancerPrediction.csv")
```

In [4]:
```
display(data)
```

	id	diagnosis	radius_mean	texture_mean	perimeter_mean	area_mean	smoothness_mean
0	842302	M	17.99	10.38	122.80	1001.0	0.11840
1	842517	M	20.57	17.77	132.90	1326.0	0.08474
2	84300903	M	19.69	21.25	130.00	1203.0	0.10960
3	84348301	M	11.42	20.38	77.58	386.1	0.14250
4	84358402	M	20.29	14.34	135.10	1297.0	0.10030
...	...	...	...	...	...	...	...
564	926424	M	21.56	22.39	142.00	1479.0	0.11100
565	926682	M	20.13	28.25	131.20	1261.0	0.09780
566	926954	M	16.60	28.08	108.30	858.1	0.08455
567	927241	M	20.60	29.33	140.10	1265.0	0.11780
568	92751	B	7.76	24.54	47.92	181.0	0.05263

569 rows × 33 columns

To display top 10 rows

In [5]:
```
data.head(10)
```

Out[5]:

	id	diagnosis	radius_mean	texture_mean	perimeter_mean	area_mean	smoothness_mean	cor
0	842302	M	17.99	10.38	122.80	1001.0	0.11840	
1	842517	M	20.57	17.77	132.90	1326.0	0.08474	
2	84300903	M	19.69	21.25	130.00	1203.0	0.10960	
3	84348301	M	11.42	20.38	77.58	386.1	0.14250	
4	84358402	M	20.29	14.34	135.10	1297.0	0.10030	
5	843786	M	12.45	15.70	82.57	477.1	0.12780	
6	844359	M	18.25	19.98	119.60	1040.0	0.09463	
7	84458202	M	13.71	20.83	90.20	577.9	0.11890	
8	844981	M	13.00	21.82	87.50	519.8	0.12730	
9	84501001	M	12.46	24.04	83.97	475.9	0.11860	

10 rows × 33 columns

to display last 5 rows

In [6]:
```
data.tail()
```

Out[6]:

	id	diagnosis	radius_mean	texture_mean	perimeter_mean	area_mean	smoothness_mean	cor
564	926424	M	21.56	22.39	142.00	1479.0	0.11100	
565	926682	M	20.13	28.25	131.20	1261.0	0.09780	
566	926954	M	16.60	28.08	108.30	858.1	0.08455	
567	927241	M	20.60	29.33	140.10	1265.0	0.11780	
568	92751	B	7.76	24.54	47.92	181.0	0.05263	

5 rows × 33 columns

statistical summary

In [7]:
```
data.describe()
```

Out[7]:

	id	radius_mean	texture_mean	perimeter_mean	area_mean	smoothness_mean	com
count	5.690000e+02	569.000000	569.000000	569.000000	569.000000	569.000000	
mean	3.037183e+07	14.127292	19.289649	91.969033	654.889104	0.096360	

	id	radius_mean	texture_mean	perimeter_mean	area_mean	smoothness_mean	com
std	1.250206e+08	3.524049	4.301036	24.298981	351.914129	0.014064	
min	8.670000e+03	6.981000	9.710000	43.790000	143.500000	0.052630	
25%	8.692180e+05	11.700000	16.170000	75.170000	420.300000	0.086370	
50%	9.060240e+05	13.370000	18.840000	86.240000	551.100000	0.095870	
75%	8.813129e+06	15.780000	21.800000	104.100000	782.700000	0.105300	
max	9.113205e+08	28.110000	39.280000	188.500000	2501.000000	0.163400	

8 rows × 32 columns

To print number of elements

In [8]:
```
data.size
```

Out[8]: 18777

to print number of row and cols

In [9]:
```
data.shape
```

Out[9]: (569, 33)

to find missing values

In [10]:
```
data.isna()
```

Out[10]:

	id	diagnosis	radius_mean	texture_mean	perimeter_mean	area_mean	smoothness_mean	comp
0	False	False	False	False	False	False	False	
1	False	False	False	False	False	False	False	
2	False	False	False	False	False	False	False	
3	False	False	False	False	False	False	False	
4	False	False	False	False	False	False	False	
...	...	...	...	...	...	...	...	
564	False	False	False	False	False	False	False	
565	False	False	False	False	False	False	False	
566	False	False	False	False	False	False	False	
567	False	False	False	False	False	False	False	

	id	diagnosis	radius_mean	texture_mean	perimeter_mean	area_mean	smoothness_mean	comp
568	False	False	False	False	False	False	False	

569 rows × 33 columns

fill null values with a constant

In [11]:
```
data.fillna(5)
```

Out[11]:

	id	diagnosis	radius_mean	texture_mean	perimeter_mean	area_mean	smoothness_mean	c
0	842302	M	17.99	10.38	122.80	1001.0	0.11840	
1	842517	M	20.57	17.77	132.90	1326.0	0.08474	
2	84300903	M	19.69	21.25	130.00	1203.0	0.10960	
3	84348301	M	11.42	20.38	77.58	386.1	0.14250	
4	84358402	M	20.29	14.34	135.10	1297.0	0.10030	
...	...	...	...	...	...	...	...	
564	926424	M	21.56	22.39	142.00	1479.0	0.11100	
565	926682	M	20.13	28.25	131.20	1261.0	0.09780	
566	926954	M	16.60	28.08	108.30	858.1	0.08455	
567	927241	M	20.60	29.33	140.10	1265.0	0.11780	
568	92751	B	7.76	24.54	47.92	181.0	0.05263	

569 rows × 33 columns

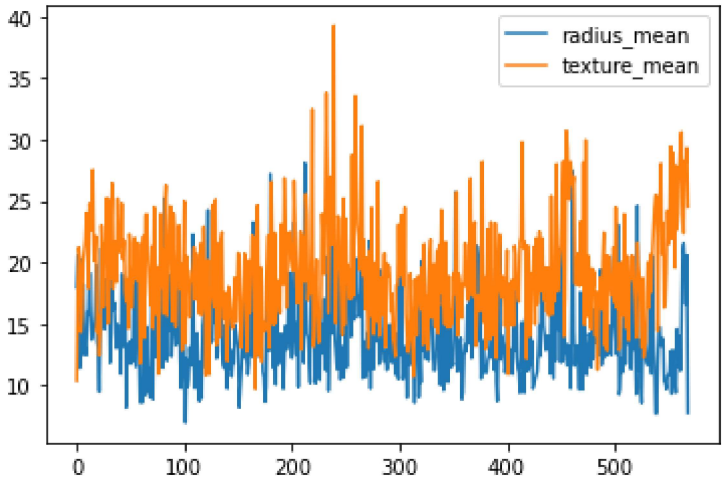
to select a particular columns

In [12]:
```
df=pd.DataFrame(data[["radius_mean","texture_mean"]])
import matplotlib.pyplot as plt
```

line plot

In [13]:
```
df.plot.line()
```

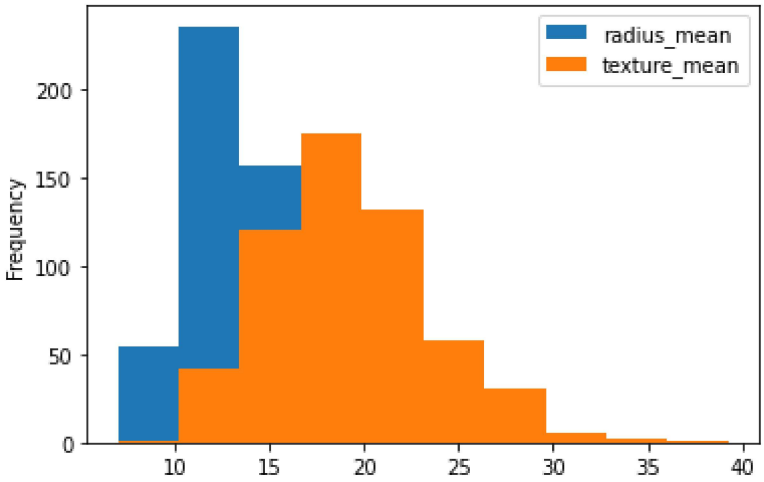
Out[13]: <AxesSubplot:>



histogram

In [14]:
```
df.plot.hist()
```

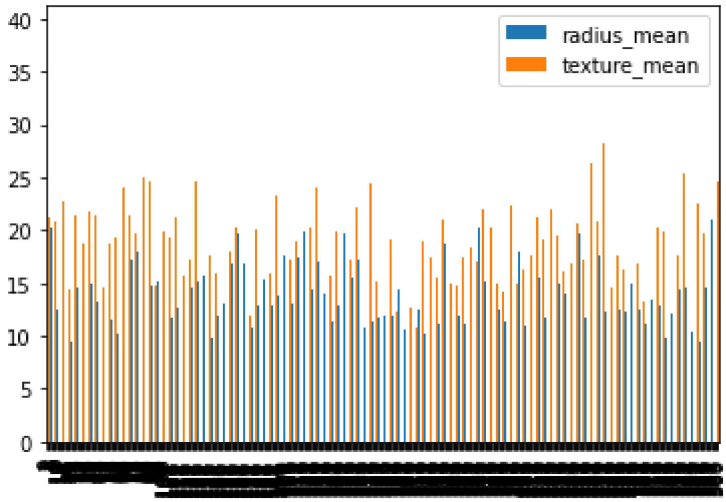
Out[14]: <AxesSubplot:ylabel='Frequency'>



bar chart

In [15]:
```
df.plot.bar()
```

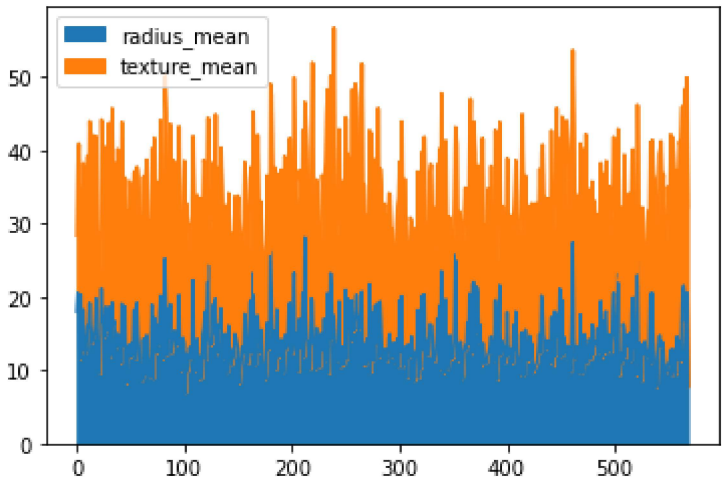
Out[15]: <AxesSubplot:>



area plot

In [16]:
```
df.plot.area()
```

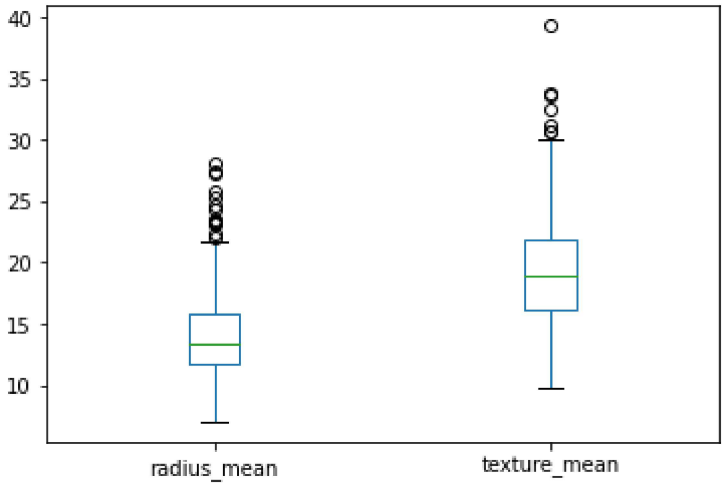
Out[16]: <AxesSubplot:>



box plot

In [17]:
```
df.plot.box()
```

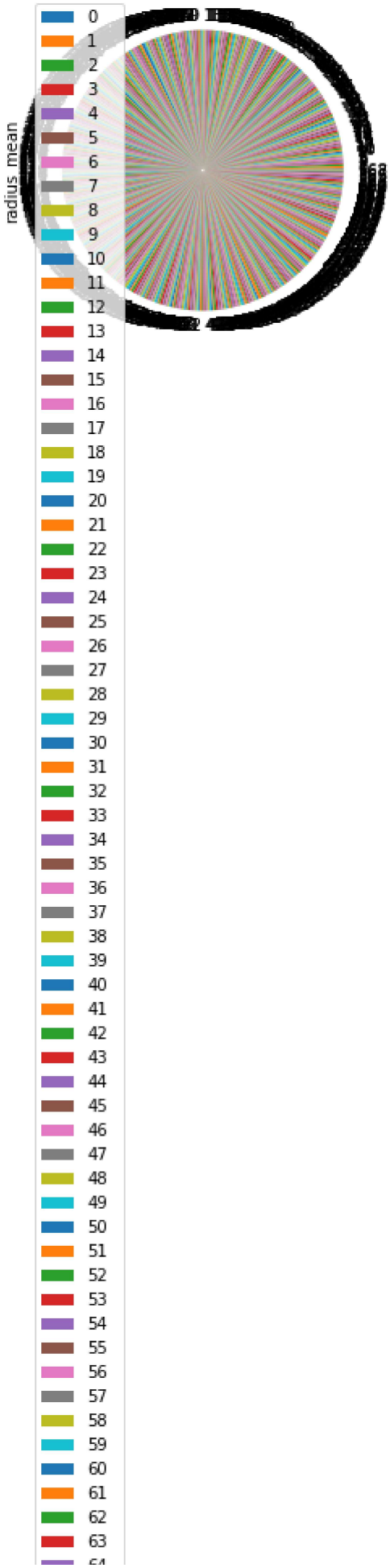
Out[17]: <AxesSubplot:>



pie plot

In [18]:
```
df.plot.pie(y="radius_mean")
```

Out[18]:
```
<AxesSubplot:ylabel='radius_mean'>
```


radius_mean
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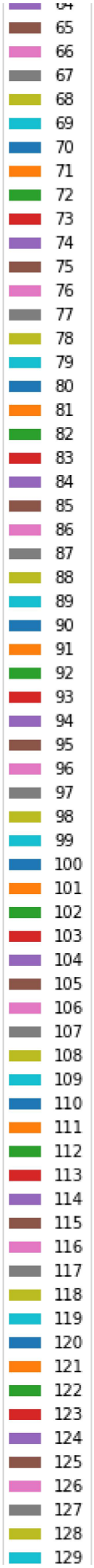
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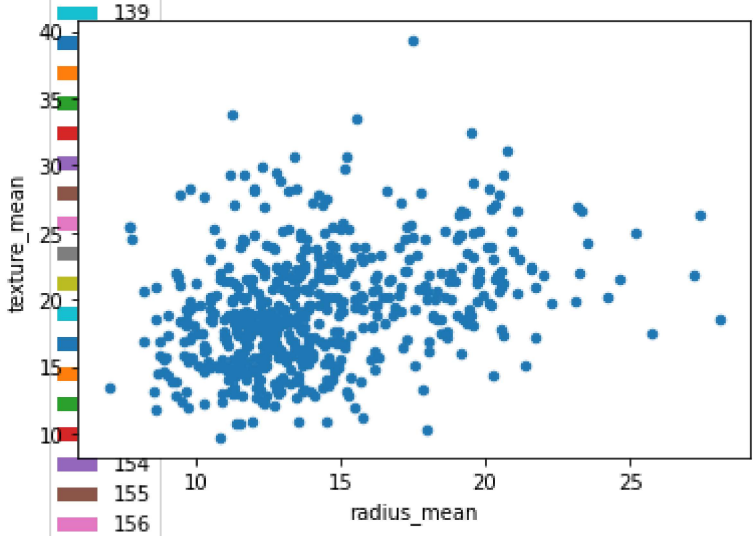
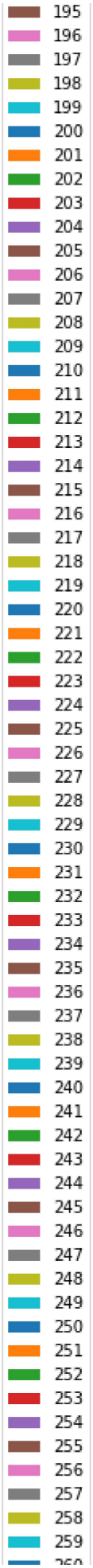
scatter plot

In [19]:
```
df.plot.scatter(x="radius_mean",y="texture_mean")
```

Out[19]: <AxesSubplot:xlabel='radius_mean', ylabel='texture_mean'>

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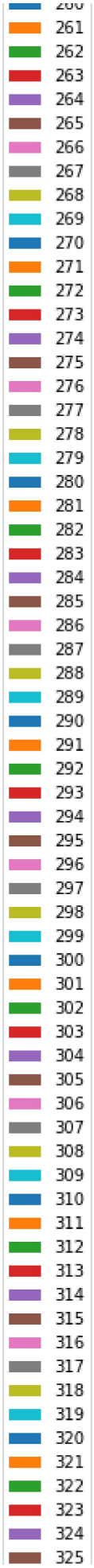
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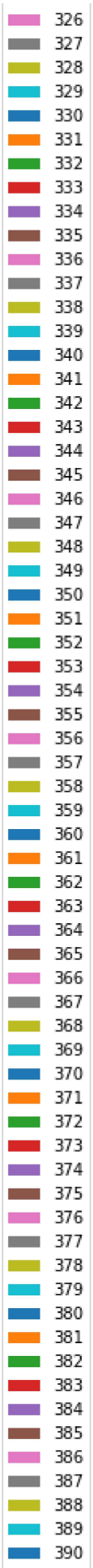
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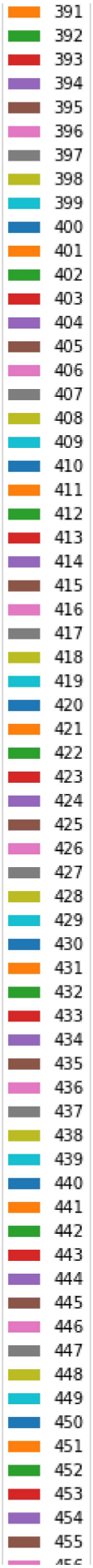
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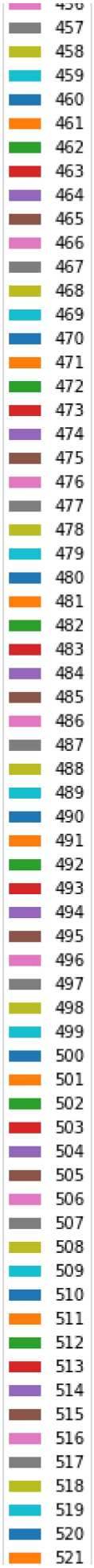
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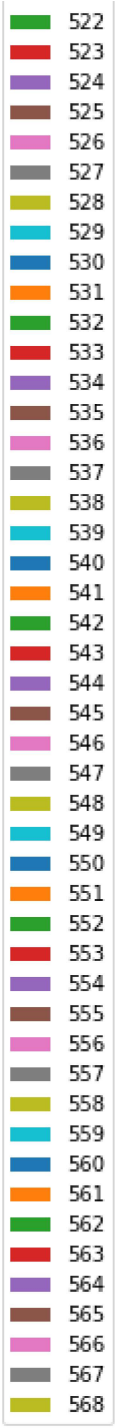
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