In [45]:
```
import warnings
warnings.simplefilter("ignore")
```

In [46]:
```
import pandas as pd
import numpy as np
```

In [47]:
```
data=pd.read_csv("rice dataset.csv")
data
```

Out[47]:

	N	P	K	temperature	humidity	ph	rainfall	label
0	90	42	43	20.879744	82.002744	6.502985	202.935536	rice
1	85	58	41	21.770462	80.319644	7.038096	226.655537	rice
2	60	55	44	23.004459	82.320763	7.840207	263.964248	rice
3	74	35	40	26.491096	80.158363	6.980401	242.864034	rice
4	78	42	42	20.130175	81.604873	7.628473	262.717340	rice
...	...	...	...	...	...	...	...	...
95	88	46	42	22.683191	83.463583	6.604993	194.265172	rice
96	93	47	37	21.533463	82.140041	6.500343	295.924880	rice
97	60	55	45	21.408658	83.329319	5.935745	287.576694	rice
98	78	35	44	26.543481	84.673536	7.072656	183.622266	rice
99	65	37	40	23.359054	83.595123	5.333323	188.413665	rice

100 rows × 8 columns

In [48]:
```
data=data.loc[::,['N','P','K','temperature','humidity','ph','rainfall']]
data
```

Out[48]:

	N	P	K	temperature	humidity	ph	rainfall
0	90	42	43	20.879744	82.002744	6.502985	202.935536
1	85	58	41	21.770462	80.319644	7.038096	226.655537
2	60	55	44	23.004459	82.320763	7.840207	263.964248
3	74	35	40	26.491096	80.158363	6.980401	242.864034
4	78	42	42	20.130175	81.604873	7.628473	262.717340
...	...	...	...	...	...	...	...
95	88	46	42	22.683191	83.463583	6.604993	194.265172
96	93	47	37	21.533463	82.140041	6.500343	295.924880
97	60	55	45	21.408658	83.329319	5.935745	287.576694
98	78	35	44	26.543481	84.673536	7.072656	183.622266
99	65	37	40	23.359054	83.595123	5.333323	188.413665

100 rows × 7 columns

In [49]:
```
x=data.iloc[:,0]
```

In [50]:
```
x.shape
```

Out[50]:
```
(100,)
```

In [51]:
```
x=data.iloc[:,0].values.reshape(-1,1)
```

In [52]:
```
x.shape
```

Out[52]:
```
(100, 1)
```

In [53]:
```
y=data.iloc[:,-1].values.reshape(-1,1)
```

In [54]:
```
y.shape
```

Out[54]:
```
(100, 1)
```

In [55]:
```
x
```

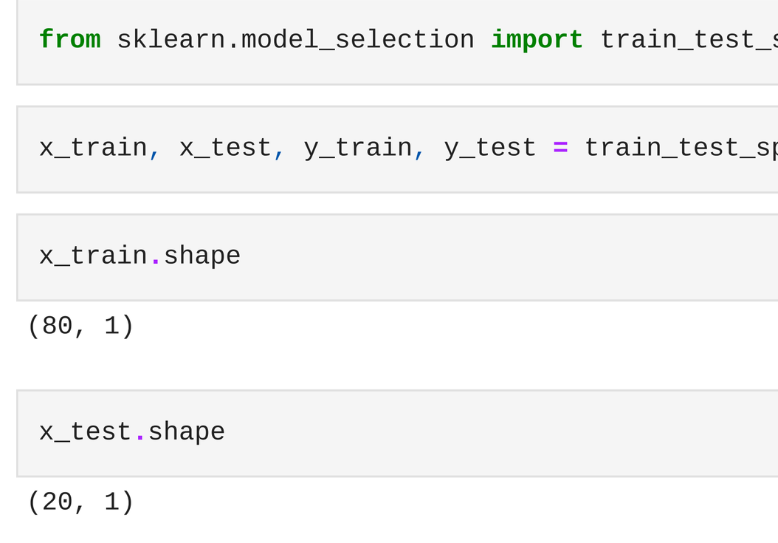
Out[55]:
```
array([[90],
       [85],
       [60],
       [74],
       [78],
       [69],
       [69],
       [94],
       [89],
       [68],
       [91],
       [90],
       [78],
       [93],
       [94],
       [60],
       [85],
       [91],
       [77],
       [88],
       [89],
       [76],
       [67],
       [83],
       [98],
       [66],
       [97],
       [97],
       [60],
       [84],
       [73],
       [92],
       [85],
       [98],
       [88],
       [95],
       [99],
       [95],
       [60],
       [63],
       [62],
       [64],
       [83],
       [82],
       [85],
       [91],
       [76],
       [74],
       [79],
       [88],
       [60],
       [76],
       [93],
       [65],
       [95],
       [75],
       [74],
       [91],
       [71],
       [99],
       [72],
       [83],
       [93],
       [70],
       [76],
       [99],
       [99],
       [86],
       [69],
       [91],
       [61],
       [67],
       [79],
       [78],
       [75],
       [97],
       [67],
       [73],
       [77],
       [81],
       [68],
       [72],
       [61],
       [67],
       [67],
       [66],
       [82],
       [84],
       [81],
       [91],
       [93],
       [90],
       [81],
       [78],
       [60],
       [88],
       [93],
       [60],
       [78],
       [65]], dtype=int64)
```

In [56]:
```
y
```

Out[56]:
```
array([[202.9355362],
       [226.6555374],
       [263.9642476],
       [242.8640342],
       [262.7173405],
       [251.0549998],
       [271.3248604],
       [241.9741949],
       [230.4462359],
       [221.2091958],
       [264.6148697],
       [250.0832336],
       [284.4364567],
       [185.2773389],
       [209.5869708],
       [231.0863347],
       [276.6552459],
       [206.2611855],
       [224.5550169],
       [291.2986618],
       [185.4974732],
       [231.3843163],
       [213.3560921],
       [233.1075816],
       [224.0581164],
       [257.0038865],
       [271.3586137],
       [260.2634026],
       [240.0810647],
       [197.9791215],
       [272.2017204],
       [200.0882787],
       [224.6757231],
       [270.4417274],
       [233.1321372],
       [193.3473987],
       [272.2999056],
       [285.2493645],
       [298.4018471],
       [257.0343554],
       [248.7183228],
       [209.9001977],
       [200.834898 ],
       [298.5601175],
       [265.5355937],
       [183.6793207],
       [196.9560008],
       [233.0453455],
       [210.8142087],
       [253.7202781],
       [219.9048349],
       [208.5810155],
       [195.0948311],
       [227.3637009],
       [286.5083725],
       [283.9338466],
       [217.3788583],
       [267.9761948],
       [191.9535738],
       [277.9626192],
       [245.1511304],
       [245.6626799],
       [279.5451717],
       [202.3838319],
       [263.6372176],
       [182.5616319],
       [198.6730942],
       [243.5120414],
       [263.1103304],
       [269.5039162],
       [204.8001847],
       [260.8875056],
       [295.6094492],
       [192.3197536],
       [257.4914906],
       [278.0791793],
       [280.4044392],
       [185.9461429],
       [194.5766559],
       [200.9133156],
       [182.9043504],
       [195.3574542],
       [223.3671883],
       [186.7536773],
       [220.1156708],
       [231.7364957],
       [242.3170629],
       [182.6549356],
       [233.7034975],
       [230.2242223],
       [290.6793783],
       [241.2013513],
       [218.9163567],
       [248.2256491],
       [256.9964761],
       [194.2651719],
       [295.9248796],
       [287.5766935],
       [183.6222657],
       [188.413665 ]])
```

In [57]:
```
import matplotlib.pyplot as plt
%matplotlib inline
```

In [58]:
```
plt.scatter(x,y)
plt.show()
```



In [59]:
```
from sklearn.model_selection import train_test_split
```

In [60]:
```
x_train, x_test, y_train, y_test = train_test_split(x,y,test_size = 0.2,random_state = 0)
```

In [61]:
```
x_train.shape
```

Out[61]:
```
(80, 1)
```

In [62]:
```
x_test.shape
```

Out[62]:
```
(20, 1)
```

In [63]:
```
y_train.shape
```

Out[63]:
```
(80, 1)
```

In [64]:
```
x_test.shape
```

Out[64]:
```
(20, 1)
```

In [65]:
```
from sklearn.linear_model import LinearRegression
```

lm = LinearRegression()

In [66]:
```
lm = LinearRegression()
```

In [67]:
```
lm.fit(x_train,y_train)
```

Out[67]:
```
LinearRegression()
```

In [68]:
```
y_pred = lm.predict(x_test)
```

In [69]:
```
y_pred
```

Out[69]:
```
array([[236.34830826],
       [235.24498504],
       [233.62677765],
       [234.73010087],
       [236.34830826],
       [234.95076551],
       [235.46564969],
       [234.95076551],
       [236.2011985 ],
       [235.68631433],
       [233.99455205],
       [235.17143016],
       [234.87721063],
       [236.05408874],
       [236.12764362],
       [234.58299111],
       [234.14166182],
       [236.42186315],
       [236.42186315],
       [235.75986921]])
```

In [73]:
```
plt.scatter(x,y,color = 'blue')
plt.plot(x_test,y_pred,color = 'red')
```

Out[73]:
```
[<matplotlib.lines.Line2D at 0x20b52cadbb0>]
```