

Creating Final Data for Crop and Fertilizer Recommendation System

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

```
fertilizer_data_path = '/content/FertilizerData.csv'
merge_fert = pd.read_csv(fertilizer_data_path)
```

```
merge_fert.head()
```

	Unnamed: 0	Crop	N	P	K	pH
0	0	rice	80	40	40	5.5
1	3	maize	80	40	20	5.5
2	5	chickpea	40	60	80	5.5
3	12	kidneybeans	20	60	20	5.5
4	13	pigeonpeas	20	60	20	5.5

```
del merge_fert['Unnamed: 0']
```

```
merge_fert.describe()
```

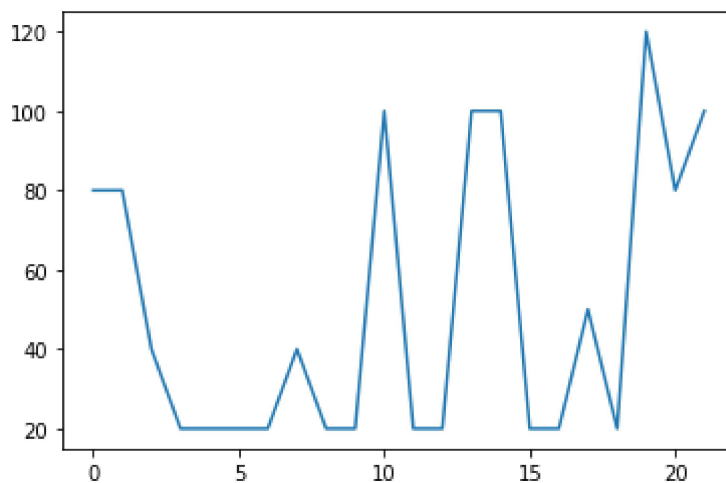
		N	P	K	pH
count	22.000000	22.000000	22.000000	22.000000	22.000000
mean	50.454545	45.681818	48.181818	5.409091	
std	36.315715	32.634172	51.698426	0.590326	
min	20.000000	10.000000	10.000000	4.000000	
25%	20.000000	20.000000	20.000000	5.500000	
50%	30.000000	40.000000	30.000000	5.500000	
75%	80.000000	60.000000	50.000000	5.500000	
max	120.000000	125.000000	200.000000	6.500000	

```
merge_fert['Crop'].unique()
```

```
array(['rice', 'maize', 'chickpea', 'kidneybeans', 'pigeonpeas',  
      'mothbeans', 'mungbean', 'blackgram', 'lentil', 'pomegranate',  
      'banana', 'mango', 'grapes', 'watermelon', 'muskmelon', 'apple',  
      'orange', 'papaya', 'coconut', 'cotton', 'jute', 'coffee'],  
      dtype=object)
```

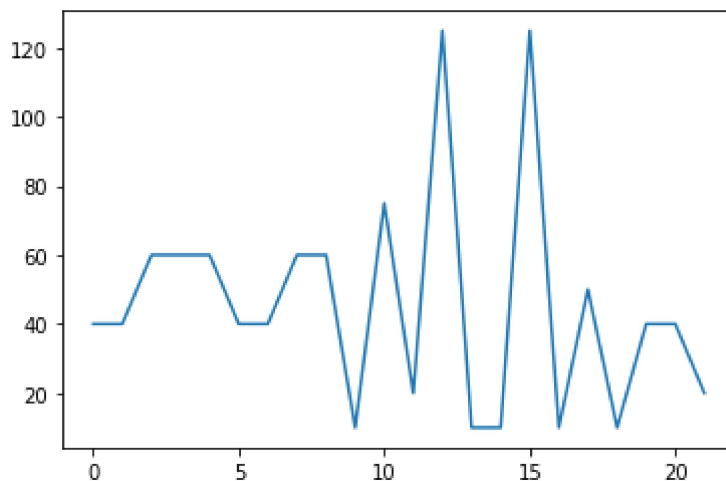
```
plt.plot(merge_fert["N"])
```

```
[<matplotlib.lines.Line2D at 0x7f0a2b5c4550>]
```



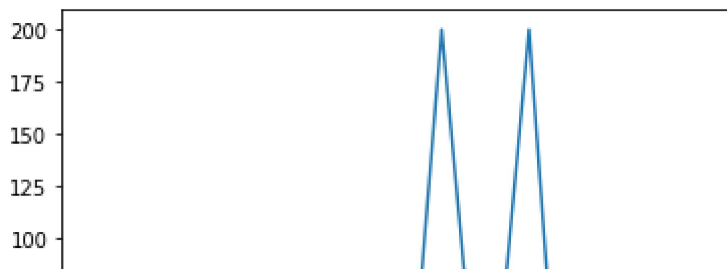
```
plt.plot(merge_fert["P"])
```

```
[<matplotlib.lines.Line2D at 0x7f0a2b0a4190>]
```



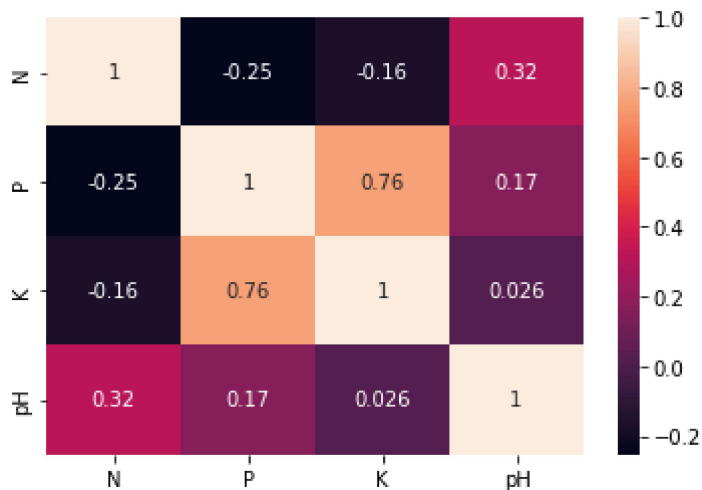
```
plt.plot(merge_fert["K"])
```

[<matplotlib.lines.Line2D at 0x7f0a2b010810>]



```
sns.heatmap(merge_fert.corr(),annot=True)
```

<matplotlib.axes._subplots.AxesSubplot at 0x7f0a2afdf810>



```
merge_crop = pd.read_csv('/content/MergeFileCrop.csv')
reco_fert = merge_fert
```

```
#Add +/-3 for every NPK value
```

```
import random
```

```
temp = pd.DataFrame(columns = ['N','P','K'])
```

```
for i in range(0,merge_crop.shape[0]):
```

```
    crop = merge_crop.label.iloc[i]
```

```
    #print(crop)
```

```
    N = reco_fert[reco_fert['Crop'] == crop]["N"].iloc[0] + random.randint(-20,20)
```

```
    P = reco_fert[reco_fert['Crop'] == crop]["P"].iloc[0] + random.randint(-5,20)
```

```
    K = reco_fert[reco_fert['Crop'] == crop]["K"].iloc[0] + random.randint(-5,5)
```

```
    d = {"N":N,"P":P,"K":K}
```

```
    #print(d)
```

```
    temp = temp.append(d,ignore_index = True)
```

```
temp
```

	N	P	K
0	91	48	39
1	72	43	45
2	89	53	42
3	72	50	38
4	90	55	39
...
2195	117	20	32
2196	86	39	35
2197	109	28	27

```
merge_crop['N'] = temp['N']
merge_crop['P'] = temp['P']
merge_crop['K'] = temp['K']
merge_crop
```

	Unnamed: 0	temperature	humidity	ph	rainfall	label	N	P	K
0	0	20.879744	82.002744	6.502985	202.935536	rice	91	48	39
1	1	21.770462	80.319644	7.038096	226.655537	rice	72	43	45
2	2	23.004459	82.320763	7.840207	263.964248	rice	89	53	42
3	3	26.491096	80.158363	6.980401	242.864034	rice	72	50	38
4	4	20.130175	81.604873	7.628473	262.717340	rice	90	55	39
...
2195	895	26.774637	66.413269	6.780064	177.774507	coffee	117	20	32
2196	896	27.417112	56.636362	6.086922	127.924610	coffee	86	39	35
2197	897	24.131797	67.225123	6.362608	173.322839	coffee	109	28	27
2198	898	26.272418	52.127394	6.758793	127.175293	coffee	114	15	35
2199	899	23.603016	60.396475	6.779833	140.937041	coffee	96	18	33

2200 rows × 9 columns

```
del merge_crop['Unnamed: 0']
merge_crop
```

	temperature	humidity	ph	rainfall	label	N	P	K
0	20.879744	82.002744	6.502985	202.935536	rice	91	48	39
1	21.770462	80.319644	7.038096	226.655537	rice	72	43	45
2	23.004459	82.320763	7.840207	263.964248	rice	89	53	42
3	26.491096	80.158363	6.980401	242.864034	rice	72	50	38
4	20.130175	81.604873	7.628473	262.717340	rice	90	55	39
...
2195	26.774637	66.413269	6.780064	177.774507	coffee	117	20	32
2196	27.417112	56.636362	6.086922	127.924610	coffee	86	39	35
2197	24.131797	67.225123	6.362608	173.322839	coffee	109	28	27
2198	26.272418	52.127394	6.758793	127.175293	coffee	114	15	35
2199	23.603016	60.396475	6.779833	140.937041	coffee	96	18	33

```
merge_crop = merge_crop[['N', 'P', 'K', 'temperature', 'humidity', 'ph', 'rainfall', 'label']]
```

```
merge_crop.to_csv("/content/crop_recommendation.csv", index=False)
```

```
# Checking if everything went fine
```

```
df = pd.read_csv('/content/crop_recommendation.csv')
```

```
df.head()
```

	N	P	K	temperature	humidity	ph	rainfall	label
0	91	48	39	20.879744	82.002744	6.502985	202.935536	rice
1	72	43	45	21.770462	80.319644	7.038096	226.655537	rice
2	89	53	42	23.004459	82.320763	7.840207	263.964248	rice
3	72	50	38	26.491096	80.158363	6.980401	242.864034	rice
4	90	55	39	20.130175	81.604873	7.628473	262.717340	rice

```
df.shape
```

```
(2200, 8)
```

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