

```
In [24]: from __future__ import print_function
import pandas as pd
import numpy as np
import seaborn as sns
%matplotlib inline

import matplotlib.pyplot as plt
%matplotlib inline
import sys
# Dependencies

import pandas as pd
import numpy as np
from sklearn.cluster import KMeans
from sklearn.preprocessing import LabelEncoder
from sklearn.preprocessing import MinMaxScaler
import seaborn as sns
import matplotlib.pyplot as plt
```

```
In [7]: train = pd.read_csv(r'C:\Users\cgdhv\Downloads\Bayesian Dataset.csv',
encoding='ISO-8859-1')
print(train)
```

	Primary_Communic_Platform	Comm_Platform_Satisfaction(1-Yes, 0-No)	\
0	Whatsapp	1.0	
1	Mail	0.0	
2	Mail	0.0	
3	Mail	0.0	
4	Mail	1.0	
5	Mail	0.0	
6	Mail	1.0	
7	Whatsapp	0.0	
8	Slack	0.0	
9	Whatsapp	0.5	
10	Mail	0.0	
11	Mail	1.0	

12	Mail	1.0
13	Whatsapp	0.5
14	Mail	0.5
15	Mail	1.0
16	Mail	1.0
17	Mail	0.5
18	Mail	0.5
19	Mail	1.0
20	Mail	1.0
21	Whatsapp	1.0
22	Whatsapp	1.0
23	Mail	0.5
24	Mail	1.0
25	Mail	1.0
26	Mail	0.5
27	None	1.0
28	Mail	1.0
29	Mail	1.0
..	...	...
42	Mail	1.0
43	Mail	0.0
44	Mail	0.5
45	Mail	0.0
46	Mail	1.0
47	Mail	0.0
48	None	0.5
49	Mail	1.0
50	Mail	1.0
51	Mail	1.0
52	Mail	0.0
53	Mail	1.0
54	Mail	1.0
55	Mail	1.0
56	Mail	1.0
57	Mail	1.0
58	Mail	1.0
59	Mail	0.0
60	Mail	0.5
61	Mail	1.0

62	Mail	1.0
63	Mail	1.0
64	Mail	1.0
65	Mail	0.0
66	Mail	1.0
67	Mail	0.5
68	Mail	1.0
69	None	0.0
70	Mail	1.0
71	Mail	1.0

	Pref_Live_Lectures	Pref_Audio_Lectures	Pref_Recorded_Content	\
0	0	0	0	
1	0	0	1	
2	1	0	1	
3	1	0	0	
4	1	0	1	
5	0	0	1	
6	0	0	1	
7	0	0	1	
8	1	1	0	
9	1	0	0	
10	0	0	1	
11	1	0	1	
12	1	0	1	
13	1	0	0	
14	1	0	1	
15	0	0	1	
16	0	0	1	
17	0	0	1	
18	0	0	1	
19	0	0	1	
20	1	0	1	
21	1	0	0	
22	1	0	0	
23	0	0	1	
24	0	1	1	
25	0	0	1	
26	0	0	1	

27	0	0	1
28	1	0	1
29	1	0	1
..	...	...	...
42	1	1	1
43	0	0	0
44	1	1	1
45	0	0	1
46	0	0	1
47	1	0	1
48	0	0	1
49	0	0	0
50	1	1	1
51	1	0	0
52	1	0	1
53	1	0	1
54	1	1	1
55	1	1	0
56	1	0	1
57	1	0	1
58	0	0	1
59	0	0	1
60	0	0	1
61	1	0	1
62	1	1	1
63	0	0	1
64	1	0	1
65	1	1	1
66	1	1	1
67	0	0	1
68	1	0	1
69	1	1	1
70	0	0	1
71	0	0	1

	Pref_PowerPoint_presentation	Pref_Interactive_Sessions	\
0	1	0.0	
1	1	0.0	
2	0	0.0	

3	0	0.0
4	0	0.0
5	1	1.0
6	1	0.0
7	0	0.0
8	0	0.0
9	0	0.0
10	0	0.0
11	1	0.0
12	1	0.0
13	0	0.0
14	1	0.0
15	1	0.0
16	1	0.0
17	1	0.0
18	0	0.0
19	0	0.0
20	0	0.0
21	0	0.0
22	0	0.0
23	0	0.0
24	1	0.0
25	1	0.0
26	0	0.0
27	0	0.0
28	1	0.0
29	0	0.0
..	...	...
42	1	1.0
43	0	1.0
44	0	1.0
45	1	1.0
46	1	0.0
47	1	0.0
48	1	1.0
49	0	1.0
50	1	1.0
51	0	0.0
52	0	0.0

53	1	1.0
54	1	1.0
55	1	0.0
56	1	1.0
57	1	0.0
58	0	1.0
59	1	1.0
60	1	0.0
61	1	0.0
62	1	0.0
63	0	0.0
64	0	0.0
65	0	0.0
66	1	0.0
67	1	1.0
68	0	0.0
69	1	1.0
70	0	1.0
71	1	0.0

Score \	Pref_ContentDelivery_mode	PercentileAbleTo
0	PowerPoint presentation	
78		
1	Recorded Content, PowerPoint presentation	
40		
2	Live Lectures, Recorded Content	
50		
3	Live Lectures	
30		
4	Live Lectures, Recorded Content	
70		
5	Recorded Content, PowerPoint presentation, Int...	
40		
6	Recorded Content, PowerPoint presentation	
2		
7	Recorded Content	
70		
8	Live Lectures, Audio Lectures	

	70	
9		Live Lectures
	80	
10		Recorded Content
	60	
11	Live Lectures, Recorded Content, PowerPoint pr...	
	40	
12	Live Lectures, Recorded Content, PowerPoint pr...	
	80	
13		Live Lectures
	80	
14	Live Lectures, Recorded Content, PowerPoint pr...	
	45	
15	Recorded Content, PowerPoint presentation	
	50	
16	Recorded Content, PowerPoint presentation	
	70	
17	Recorded Content, PowerPoint presentation	
	20	
18		Recorded Content
	60	
19		Recorded Content
	70	
20	Live Lectures, Recorded Content	
	30	
21		Live Lectures
	80	
22		Live Lectures
	70	
23		Recorded Content
	60	
24	Audio Lectures, Recorded Content, PowerPoint ...	
	50	
25	Recorded Content, PowerPoint presentation	
	50	
26		Recorded Content
	50	
27		Recorded Content
	70	

28	Live Lectures, Recorded Content, PowerPoint pr...
	50
29	Live Lectures, Recorded Content
	60
..	...
...	
42	Live Lectures, Audio Lectures, Recorded Conte...
	40
43	Interactive Sessions
	38
44	Live Lectures, Audio Lectures, Recorded Conte...
	28
45	Recorded Content, PowerPoint presentation, Int...
	58
46	Recorded Content, PowerPoint presentation
	60
47	Live Lectures, Recorded Content, PowerPoint pr...
	56
48	Recorded Content, PowerPoint presentation, Int...
	30
49	Interactive Sessions
	30
50	Live Lectures, Audio Lectures, Recorded Conte...
	40
51	Live Lectures
	45
52	Live Lectures, Recorded Content
	35
53	Live Lectures, Recorded Content, PowerPoint pr...
	30
54	Live Lectures, Audio Lectures, Recorded Conte...
	28
55	Live Lectures, Audio Lectures, PowerPoint pre...
	35
56	Live Lectures, Recorded Content, PowerPoint pr...
	30
57	Live Lectures, Recorded Content, PowerPoint pr...
	30
58	Recorded Content, Interactive Sessions



32  
 59 Recorded Content, PowerPoint presentation, Int...  
 30  
 60 Recorded Content, PowerPoint presentation  
 32  
 61 Live Lectures, Recorded Content, PowerPoint pr...  
 28  
 62 Live Lectures, Audio Lectures, Recorded Conte...  
 35  
 63 Recorded Content  
 60  
 64 Live Lectures, Recorded Content  
 32  
 65 Live Lectures, Audio Lectures, Recorded Content  
 38  
 66 Live Lectures, Audio Lectures, Recorded Conte...  
 40  
 67 Recorded Content, PowerPoint presentation, Int...  
 38  
 68 Live Lectures, Recorded Content  
 48  
 69 Live Lectures, Audio Lectures, Recorded Conte...  
 34  
 70 Recorded Content, Interactive Sessions  
 60  
 71 Recorded Content, PowerPoint presentation  
 30

	Question_Difficulty	...	QuizSolutions	TextBooks	Research Papers
\					
0	2	...	0	0	0
1	3	...	1	0	0
2	2	...	1	0	0
3	3	...	1	0	0
4	2	...	1	1	0

5	3 ...	1	1	1
6	1 ...	1	1	0
7	2 ...	0	0	0
8	2 ...	0	0	0
9	2 ...	0	0	0
10	2 ...	0	0	0
11	1 ...	1	0	0
12	3 ...	1	1	0
13	2 ...	0	0	0
14	3 ...	1	0	0
15	3 ...	0	0	0
16	2 ...	1	0	0
17	2 ...	0	0	0
18	2 ...	1	1	0
19	3 ...	1	0	0
20	3 ...	0	0	0
21	2 ...	0	0	0
22	2 ...	0	0	0
23	3 ...	1	1	1

24	2	...	0	0	0
25	3	...	0	0	0
26	3	...	1	0	1
27	2	...	1	1	0
28	2	...	1	1	0
29	3	...	1	0	0
..	...	...	...	...	...
42	3	...	1	0	0
43	3	...	1	0	0
44	3	...	1	0	0
45	3	...	1	0	0
46	2	...	1	0	0
47	3	...	1	0	0
48	3	...	1	0	0
49	3	...	1	0	0
50	3	...	1	0	0
51	3	...	1	0	0
52	3	...	1	0	0
53	3	...	1	0	0
54	3	...	1	0	0

55	3	...	1	0	0
56	3	...	1	0	0
57	3	...	1	0	0
58	3	...	1	0	0
59	3	...	1	0	0
60	3	...	1	0	0
61	3	...	1	0	0
62	3	...	1	0	0
63	2	...	0	0	0
64	3	...	1	0	0
65	3	...	1	0	0
66	3	...	1	0	0
67	3	...	1	0	0
68	3	...	1	0	0
69	3	...	1	0	0
70	2	...	1	0	0
71	3	...	1	0	0

```

0      Materials_provision_Platform \
      THA(Take-Home Assignments)
1  THA(Take-Home Assignments), Practice Exercises...
```

```

2  THA(Take-Home Assignments), Practice Exercises...
3  THA(Take-Home Assignments), Practice Exercises...
4  THA(Take-Home Assignments), Reading Materials,...
5  THA(Take-Home Assignments), Practice Exercises...
6  THA(Take-Home Assignments), Practice Exercises...
7      THA(Take-Home Assignments), Practice Exercises
8          Practice Exercises, Reading Materials
9              Practice Exercises
10      THA(Take-Home Assignments), Reading Materials
11  THA(Take-Home Assignments), Practice Exercises...
12  THA(Take-Home Assignments), Reading Materials,...
13      Practice Exercises
14  THA(Take-Home Assignments), Reading Materials,...
15      THA(Take-Home Assignments)
16  THA(Take-Home Assignments), Practice Exercises...
17      THA(Take-Home Assignments), Practice Exercises
18  THA(Take-Home Assignments), Practice Exercises...
19  THA(Take-Home Assignments), Practice Exercises...
20      THA(Take-Home Assignments)
21          Practice Exercises
22          Reading Materials
23  THA(Take-Home Assignments), Practice Exercises...
24      THA(Take-Home Assignments), Reading Materials
25      THA(Take-Home Assignments), Practice Exercises
26  THA(Take-Home Assignments), Reading Materials,...
27      Reading Materials, Quiz Solutions, Textbooks
28  THA(Take-Home Assignments), Practice Exercises...
29      THA(Take-Home Assignments), Quiz Solutions
..      ...
42  THA(Take-Home Assignments), Practice Exercises...
43  THA(Take-Home Assignments), Practice Exercises...
44  THA(Take-Home Assignments), Practice Exercises...
45  THA(Take-Home Assignments), Practice Exercises...
46  THA(Take-Home Assignments), Practice Exercises...
47  THA(Take-Home Assignments), Practice Exercises...
48  THA(Take-Home Assignments), Practice Exercises...
49  THA(Take-Home Assignments), Practice Exercises...
50  THA(Take-Home Assignments), Practice Exercises...
51  THA(Take-Home Assignments), Practice Exercises...

```

```

52  THA(Take-Home Assignments), Practice Exercises...
53  THA(Take-Home Assignments), Practice Exercises...
54  THA(Take-Home Assignments), Practice Exercises...
55  THA(Take-Home Assignments), Practice Exercises...
56  THA(Take-Home Assignments), Practice Exercises...
57  THA(Take-Home Assignments), Practice Exercises...
58  THA(Take-Home Assignments), Practice Exercises...
59  THA(Take-Home Assignments), Practice Exercises...
60  THA(Take-Home Assignments), Practice Exercises...
61  THA(Take-Home Assignments), Practice Exercises...
62  THA(Take-Home Assignments), Practice Exercises...
63      THA(Take-Home Assignments), Reading Materials
64  THA(Take-Home Assignments), Practice Exercises...
65  THA(Take-Home Assignments), Practice Exercises...
66  THA(Take-Home Assignments), Practice Exercises...
67  THA(Take-Home Assignments), Practice Exercises...
68  THA(Take-Home Assignments), Practice Exercises...
69  THA(Take-Home Assignments), Practice Exercises...
70  THA(Take-Home Assignments), Practice Exercises...
71  THA(Take-Home Assignments), Practice Exercises...

```

	Tests_Assignments_in_course	Result_Show_Time	AvgDur_Tests	\
0	20	72	30	
1	20	72	30	
2	20	72	30	
3	20	72	30	
4	20	72	30	
5	20	72	30	
6	20	72	30	
7	20	72	30	
8	20	72	30	
9	20	72	30	
10	20	72	30	
11	20	72	30	
12	20	72	30	
13	20	72	30	
14	20	72	30	
15	20	72	30	
16	20	72	30	

17	20	72	30
18	20	72	30
19	20	72	30
20	20	72	30
21	20	72	30
22	20	72	30
23	20	72	30
24	20	72	30
25	20	72	30
26	20	72	30
27	20	72	30
28	20	72	30
29	20	72	30
..	...	...	...
42	20	72	30
43	20	72	30
44	20	72	30
45	20	72	30
46	20	72	30
47	20	72	30
48	20	72	30
49	20	72	30
50	20	72	30
51	20	72	30
52	20	72	30
53	20	72	30
54	20	72	30
55	20	72	30
56	20	72	30
57	20	72	30
58	20	72	30
59	20	72	30
60	20	72	30
61	20	72	30
62	20	72	30
63	20	72	30
64	20	72	30
65	20	72	30
66	20	72	30

67	20	72	30
68	20	72	30
69	20	72	30
70	20	72	30
71	20	72	30

	WeeklyHours_Browse_Platform	Portal_Login_Freq	\
0	6	3	
1	1	2	
2	3	4	
3	1	1	
4	2	1	
5	3	2	
6	4	3	
7	5	3	
8	7	2	
9	10	3	
10	1	0	
11	4	2	
12	10	10	
13	10	3	
14	4	3	
15	10	4	
16	10	2	
17	2	2	
18	1	1	
19	1	1	
20	6	1	
21	6	6	
22	4	3	
23	9	9	
24	5	1	
25	5	1	
26	7	8	
27	10	2	
28	4	3	
29	5	5	
..	...	...	
42	1	2	



43	1	3
44	2	1
45	3	3
46	4	5
47	2	1
48	1	2
49	1	2
50	2	3
51	1	3
52	2	2
53	2	1
54	2	2
55	1	3
56	2	4
57	2	3
58	2	1
59	1	1
60	2	1
61	3	2
62	1	1
63	7	2
64	1	2
65	3	4
66	2	3
67	2	3
68	2	3
69	4	4
70	3	4
71	1	2

#### CourseProgress\_Satisfaction

0	1
1	0
2	1
3	1
4	1
5	0
6	1
7	0

8	0
9	1
10	0
11	0
12	0
13	1
14	0
15	0
16	1
17	0
18	1
19	0
20	0
21	1
22	1
23	0
24	0
25	1
26	0
27	0
28	0
29	1
..	...
42	0
43	0
44	0
45	0
46	0
47	0
48	0
49	0
50	0
51	0
52	0
53	0
54	0
55	0
56	0
57	0

```
58
59
60
61
62
63
64
65
66
67
68
69
70
71
```

```
0
0
0
0
0
1
0
0
0
0
0
0
0
0
```

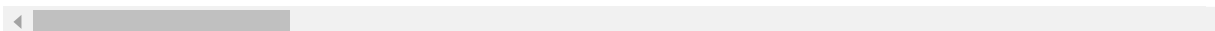
[72 rows x 32 columns]

In [8]: `train.describe()`

Out[8]:

	Comm_Platform_Satisfaction(1- Yes, 0-No)	Pref_Live_Lectures	Pref_Audio_Lectures	Pref_Recorded_Co
<b>count</b>	72.000000	72.000000	72.000000	72.000000
<b>mean</b>	0.652778	0.527778	0.180556	0.794444
<b>std</b>	0.424918	0.502731	0.387349	0.406186
<b>min</b>	0.000000	0.000000	0.000000	0.000000
<b>25%</b>	0.375000	0.000000	0.000000	1.000000
<b>50%</b>	1.000000	1.000000	0.000000	1.000000
<b>75%</b>	1.000000	1.000000	0.000000	1.000000
<b>max</b>	1.000000	1.000000	1.000000	1.000000

8 rows x 28 columns



In [9]: `train.head()`

Out[9]:

	Primary_Communications_Platform	Comm_Platform_Satisfaction(1-Yes, 0-No)	Pref_Live_Lectures	Pref_Audio_Lect
0	Whatsapp	1.0	0	
1	Mail	0.0	0	
2	Mail	0.0	1	
3	Mail	0.0	1	
4	Mail	1.0	1	

5 rows × 32 columns



```
In [10]: encodings = train.groupby('Primary_Communications_Platform')['CourseProgress_Satisfaction'].mean().reset_index()
train = train.merge(encodings, how='left', on='Primary_Communications_Platform')
train.drop('Primary_Communications_Platform', axis=1, inplace=True)
```

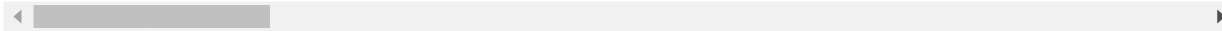
```
In [11]: train.head()
```

Out[11]:

	Comm_Platform_Satisfaction(1-Yes, 0-No)	Pref_Live_Lectures	Pref_Audio_Lectures	Pref_Recorded_Content
0	1.0	0	0	
1	0.0	0	0	
2	0.0	1	0	
3	0.0	1	0	

	Comm_Platform_Satisfaction(1-Yes, 0-No)	Pref_Live_Lectures	Pref_Audio_Lectures	Pref_Recorded_Content
4	1.0	1	0	

5 rows × 32 columns



```
In [12]: train.rename(columns={'CourseProgress_Satisfaction_y': 'Prim_Comm_Platform'}, inplace=True)
```

```
In [13]: train.head()
```

Out[13]:

	Comm_Platform_Satisfaction(1-Yes, 0-No)	Pref_Live_Lectures	Pref_Audio_Lectures	Pref_Recorded_Content
0	1.0	0	0	
1	0.0	0	0	
2	0.0	1	0	
3	0.0	1	0	
4	1.0	1	0	

5 rows × 32 columns



```
In [14]: train.drop(columns="Curr_ContentDelivery_Mode", inplace=True)
```

```
In [15]: train.drop(columns="Materials_provision_Platform", inplace=True)
```

```
In [16]: train.drop(columns="Pref_ContentDelivery_mode", inplace=True)
```

```
In [17]: train.head()
```

```
Out[17]:
```

	Comm_Platform_Satisfaction(1-Yes, 0-No)	Pref_Live_Lectures	Pref_Audio_Lectures	Pref_Recorded_Content
0	1.0	0	0	0
1	0.0	0	0	0
2	0.0	1	0	0
3	0.0	1	0	0
4	1.0	1	0	0

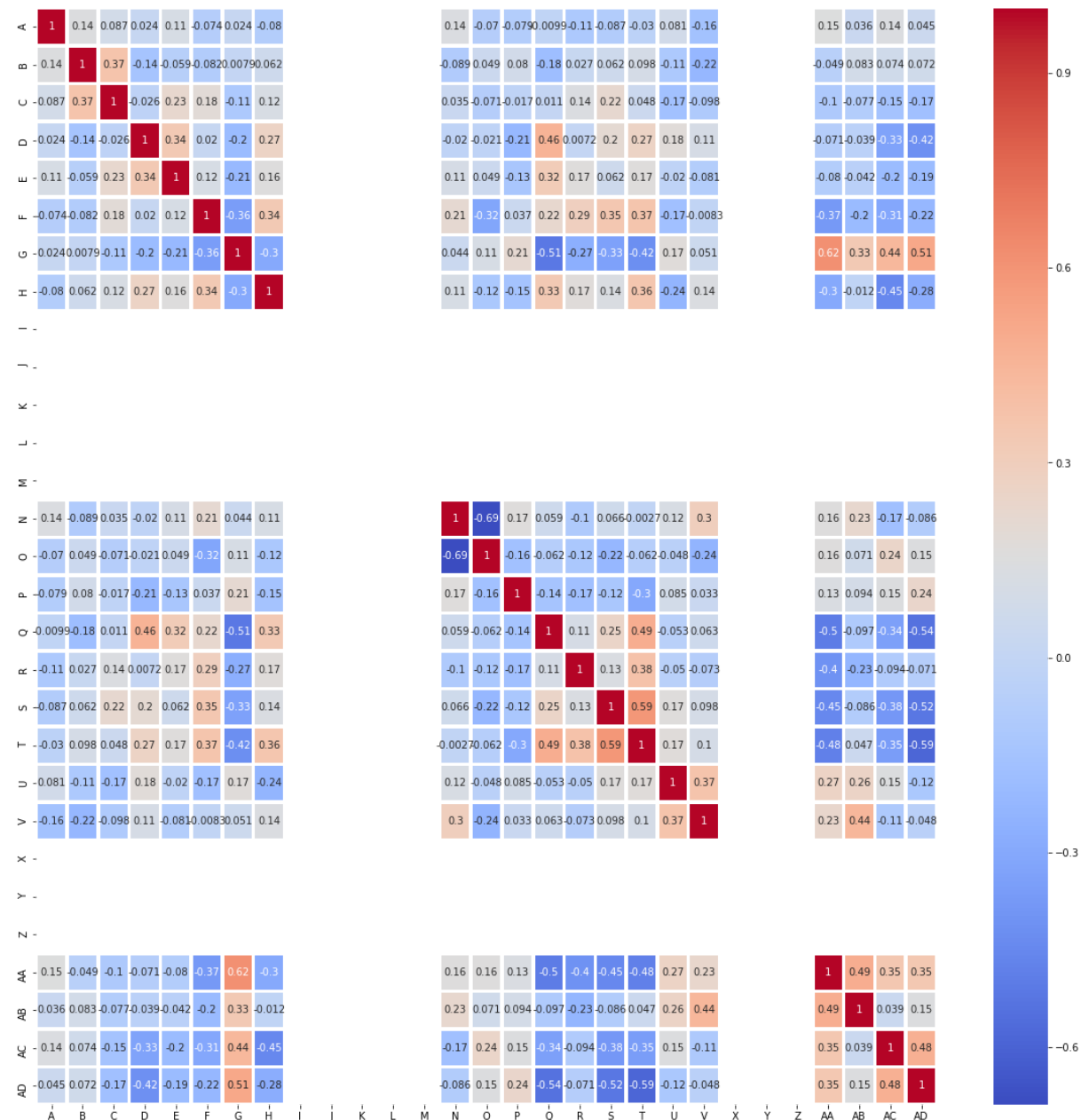
5 rows × 29 columns

```
In [18]: train.rename(columns = {'Comm_Platform_Satisfaction(1-Yes, 0-No)': 'A',
                                'Pref_Live_Lectures': 'B',
                                'Pref_Audio_Lectures': 'C', 'Pref_Recorded_Content': 'D',
                                'Pref_PowerPoint_presentation': 'E', 'Pref_Interactive_Sessions': 'F',
                                'PercentileAbleTo_Score': 'G', 'Question_Difficulty': 'H',
                                'Curr_Live_Lectures': 'I', 'Curr_Audio_Lectures': 'J', 'Curr_Recorded_Content': 'K',
                                'Curr_PowerPoint_presentation': 'L', 'Curr_Interactive_Sessions': 'M',
                                'PlatformAccessEase(1-Easy, 2-Medium, 3-Hard)': 'N', 'platform_UI_intuitive_easy-to-use': 'O',
                                'E-Learning_feature_incorporate': 'P', 'THA': 'Q', 'PracticeExercises': 'R',
                                'ReadingMaterials': 'S', 'QuizSolutions': 'T', 'TextBooks': 'U',
                                'Research Papers': 'V', 'Materials_provision_Platform': 'W',
                                'Tests_Assignments_in_course': 'X', 'Result_Show_Time': 'Y',
                                'AvgDur_Tests': 'Z', 'WeeklyHours_Browse_Platform': 'AA', 'Portal_Login_Freq': 'AB',
                                'CourseProgress_Satisfaction_x': 'AC', 'Prim_Comm_Platform': 'AD'}, inplace = True)
```

```
In [26]: corr=train.corr()
```

```
In [36]: plt.figure(figsize=(20,20))
sns.heatmap(corr, annot=True, linewidth=2.5, cmap='coolwarm')
```

```
Out[36]: <matplotlib.axes._subplots.AxesSubplot at 0x18d6cf6be48>
```



In [281]: `train.head()`

Out[281]:

	A	B	C	D	E	F	G	H	I	J	...	T	U	V	X	Y	Z	AA	AB	AC	AD
0	1.0	0	0	0	1	0.0	78	2	1	0	...	0	0	0	20	72	30	6	3	1	0.833333
1	0.0	0	0	1	1	0.0	40	3	1	0	...	1	0	0	20	72	30	1	2	0	0.163934
2	0.0	1	0	1	0	0.0	50	2	1	0	...	1	0	0	20	72	30	3	4	1	0.163934
3	0.0	1	0	0	0	0.0	30	3	1	0	...	1	0	0	20	72	30	1	1	1	0.163934
4	1.0	1	0	1	0	0.0	70	2	1	0	...	1	1	0	20	72	30	2	1	1	0.163934

5 rows × 29 columns

In [282]: `train.columns`

Out[282]: Index(['A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N',  
'O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'X', 'Y', 'Z', 'AA', 'A  
B', 'AC',  
'AD'],  
dtype='object')

In [283]: `import numpy as np  
import pandas as pd  
from sklearn.model_selection import train_test_split  
from sklearn.naive_bayes import GaussianNB  
from sklearn.metrics import accuracy_score  
import matplotlib.pyplot as plt  
import seaborn as sns`

In [284]: `train.head()`

Out[284]:

	A	B	C	D	E	F	G	H	I	J	...	T	U	V	X	Y	Z	AA	AB	AC	AD
0	1.0	0	0	0	1	0.0	78	2	1	0	...	0	0	0	20	72	30	6	3	1	0.833333
1	0.0	0	0	1	1	0.0	40	3	1	0	...	1	0	0	20	72	30	1	2	0	0.163934



	A	B	C	D	E	F	G	H	I	J	...	T	U	V	X	Y	Z	AA	AB	AC	AD
2	0.0	1	0	1	0	0.0	50	2	1	0	...	1	0	0	20	72	30	3	4	1	0.163934
3	0.0	1	0	0	0	0.0	30	3	1	0	...	1	0	0	20	72	30	1	1	1	0.163934
4	1.0	1	0	1	0	0.0	70	2	1	0	...	1	1	0	20	72	30	2	1	1	0.163934

5 rows × 29 columns

In [ ]:

```
In [296]: x=train.drop('AC', axis=1)
          y=train['AC']

          x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.25, random_state=42)
```

```
In [297]: model=GaussianNB()
          model.fit(x_train, y_train)
```

Out[297]: GaussianNB(priors=None, var\_smoothing=1e-09)

```
In [298]: train.replace([np.inf, -np.inf], np.nan, inplace=True)
          train.fillna(999, inplace=True)
```

```
In [299]: train.fillna(-99999, inplace=True)
```

```
In [300]: def clean_dataset(train):
          assert isinstance(train, pd.DataFrame), "df needs to be a pd.DataFrame"
          train.dropna(inplace=True)
          indices_to_keep = ~train.isin([np.nan, np.inf, -np.inf]).any(1)
          return train[indices_to_keep].astype(np.float64)
```

```
In [301]: x = x.values.astype(np.float)
          y = y.values.astype(np.float)
```

```
In [302]: y_pred=model.predict(x_test)
y_pred
```

```
Out[302]: array([1, 1, 1, 1, 1, 0, 0, 0, 1, 0, 1, 0, 1, 1, 0, 1, 0, 0], dtype=int
64)
```

```
In [303]: accuracy=accuracy_score(y_test, y_pred)*100
accuracy
```

```
Out[303]: 72.22222222222221
```