

Feedback for ADVD Course Improvement

This Survey will help us understand the nature and extent of the platforms that are currently being used for running the online courses (will take you a maximum of 180 secs to fill).

*** Required**

1. What is the primary communication platform that is used by your instructor for formal communication? *

Mark only one oval.

- ☐ Slack
- ☐ Mail
- ☐ Whatsapp
- ☐ Call
- ☐ Kaizala
- ☐ None

2. Are you satisfied with the communication platform that is currently being used by your instructor? *

Mark only one oval.

- ☐ Yes
- ☐ No
- ☐ Maybe

3. What is your preferred mode for accessing the content delivered by your instructor? *

Check all that apply.

- ☐ Live Lectures
☐ Audio Lectures
☐ Recorded Content
☐ PowerPoint presentation
☐ Interactive Sessions

Other: ☐ _____

4. What is the percentile you are able to score in the tests? *

5. On a scale of 1 to 3, how difficult do you find the questions (1-Easy, 2-Medium, 3-Hard) *

Mark only one oval.

	1	2	3	
Easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

6. What mode is used by your instructor to deliver lecture content? *

Check all that apply.

- ☐ Live Lectures
☐ Audio Lectures
☐ Recorded Content
☐ PowerPoint Presentation
☐ Interactive Sessions

Other: ☐ _____

7. On a scale of 1 to 3, how would you rate the ease of access to the E-Learning Platform used to Deliver content? (1-Easy, 2-Medium, 3-Hard) *

Mark only one oval.

	1	2	3	
Easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

8. Do you find the platform's user interface intuitive and easy to use? *

Mark only one oval.

- ☐ Yes
☐ No
☐ Maybe

9. What are the changes in the E-Learning Platform that you would like to incorporate? *

Mark only one oval.

- ☐ Add More Features
☐ Reduce the Number of Features
☐ The Current Features are Sufficient

10. Materials provided on the E-Learning Platform *

Check all that apply.

☐ THA(Take-Home Assignments)

☐ Practice Exercises

☐ Reading Materials

☐ Quiz Solutions

☐ Textbooks

☐ Reference Books

☐ Research Papers

Other: ☐ _____

11. How many Evaluative Tests/Assignments are present in the course? *

12. How long does the platform take to show the results after the exam(in hrs)? *

13. What is the average duration of the Quizzes/ Evaluative Tests taken on the platform?(in minutes) *

14. On a weekly basis, how many average hours do you spend browsing the E-Learning Platform? *

Mark only one oval.

1	2	3	4	5	6	7	8	9	10
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. In a day what is the average frequency of your portal login(You can divide the total logins per week by 7)? *

Mark only one oval.

0	1	2	3	4	5	6	7	8	9	10
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. Are you satisfied with the way the current course is progressing? *

Mark only one oval.

- ☐ Yes
- ☐ No

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Google Forms

```
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	
1	Recorded Content, PowerPoint presentation	
2	Live Lectures, Recorded Content	
3	Live Lectures	
4	Live Lectures, Recorded Content	
5	Recorded Content, PowerPoint presentation, Int...	
6	Recorded Content, PowerPoint presentation	
7	Recorded Content	
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
```

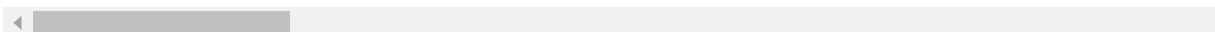
[72 rows x 32 columns]

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

Out[8]:

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

8 rows x 28 columns

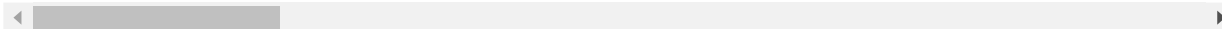


In [9]: `train.head()`

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)
```

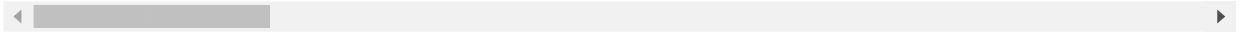
```
In [11]: train.head()
```

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



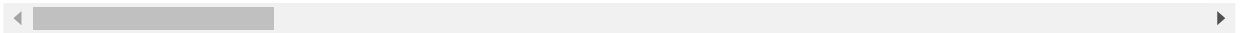
```
In [12]: train.rename(columns={'CourseProgress_Satisfaction_y': 'Prim_Comm_Platform'}, inplace=True)
```

```
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

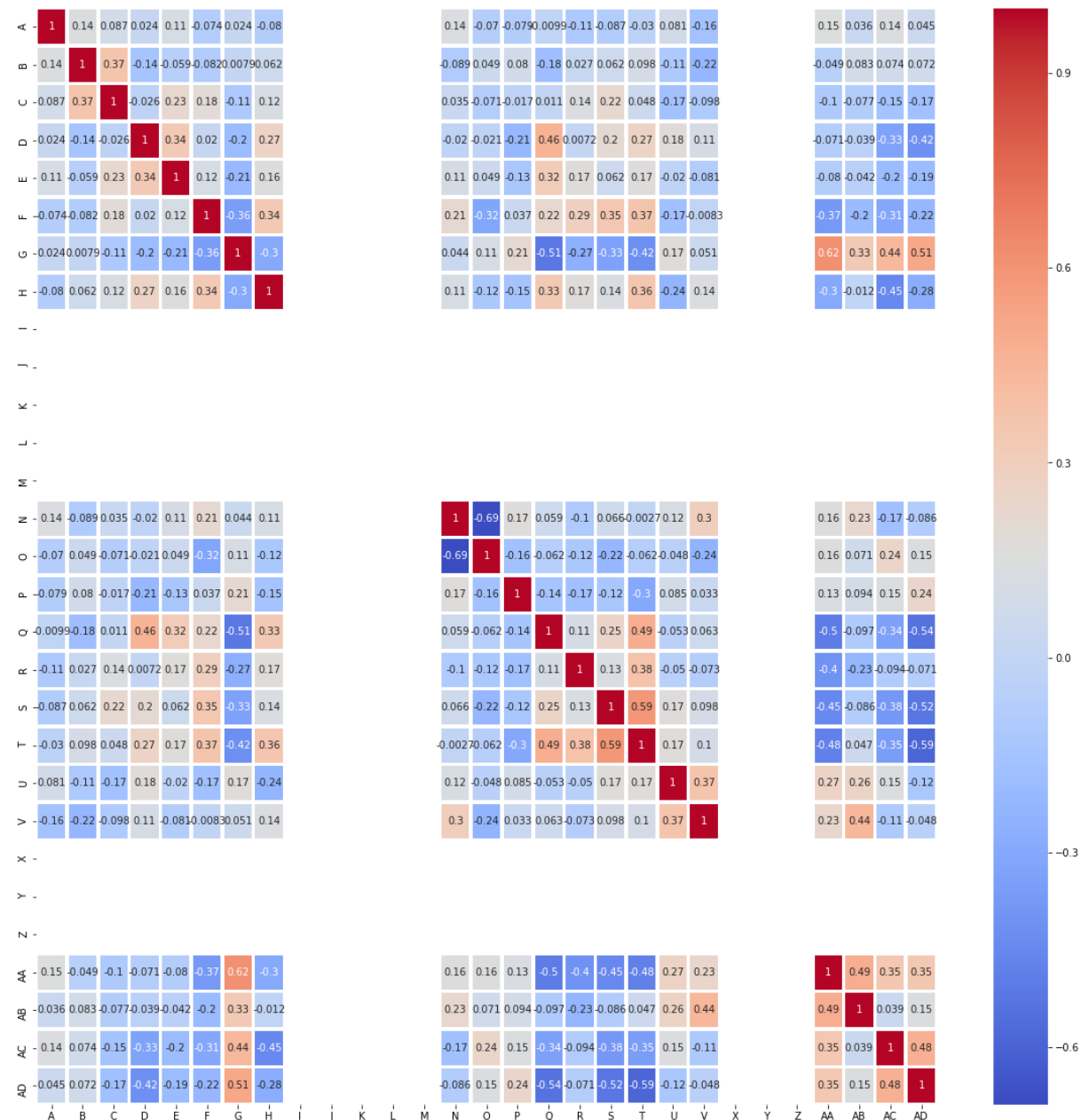
5 rows × 29 columns

```
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
```

Primary_Co	Comm_Pla	Pref_Live_	Pref_Audic	Pref_Reco	Pref_Powe	Pref_Inter	Pref_Con	Percentile	Question_I
Whatsapp	1	0	0	0	1	0	PowerPoin	78	2
Mail	0	0	0	1	1	0	Recorded C	40	3
Mail	0	1	0	1	0	0	Live Lectur	50	2
Mail	0	1	0	0	0	0	Live Lectur	30	3
Mail	1	1	0	1	0	0	Live Lectur	70	2
Mail	0	0	0	1	1	1	Recorded C	40	3
Mail	1	0	0	1	1	0	Recorded C	2	1
Whatsapp	0	0	0	1	0	0	Recorded C	70	2
Slack	0	1	1	0	0	0	Live Lectur	70	2
Whatsapp	0.5	1	0	0	0	0	Live Lectur	80	2
Mail	0	0	0	1	0	0	Recorded C	60	2
Mail	1	1	0	1	1	0	Live Lectur	40	1
Mail	1	1	0	1	1	0	Live Lectur	80	3
Whatsapp	0.5	1	0	0	0	0	Live Lectur	80	2
Mail	0.5	1	0	1	1	0	Live Lectur	45	3
Mail	1	0	0	1	1	0	Recorded C	50	3
Mail	1	0	0	1	1	0	Recorded C	70	2
Mail	0.5	0	0	1	1	0	Recorded C	20	2
Mail	0.5	0	0	1	0	0	Recorded C	60	2
Mail	1	0	0	1	0	0	Recorded C	70	3
Mail	1	1	0	1	0	0	Live Lectur	30	3
Whatsapp	1	1	0	0	0	0	Live Lectur	80	2
Whatsapp	1	1	0	0	0	0	Live Lectur	70	2
Mail	0.5	0	0	1	0	0	Recorded C	60	3
Mail	1	0	1	1	1	0	Audio Lect	50	2
Mail	1	0	0	1	1	0	Recorded C	50	3
Mail	0.5	0	0	1	0	0	Recorded C	50	3
None	1	0	0	1	0	0	Recorded C	70	2
Mail	1	1	0	1	1	0	Live Lectur	50	2
Mail	1	1	0	1	0	0	Live Lectur	60	3
Mail	0	1	0	1	0	1	Live Lectur	40	3
Mail	1	1	0	1	0	1	Live Lectur	34	3
Mail	0	0	0	1	1	0	Recorded C	45	3
Mail	1	0	0	1	0	1	Recorded C	20	3
Mail	0	0	0	1	1		Recorded C	50	3
Mail	1	1	1	1	1	1	Live Lectur	40	3
Mail	0	0	0	0	0	1	Interactive	25	2
Mail	0.5	0	0	1	1	1	Recorded C	45	3
Mail	1	1	1	0	1	1	Live Lectur	65	2
Mail	0.5	1	0	1	1	1	Live Lectur	50	3
None	0.5	1	0	0	0	0	Live Lectur	30	1
Mail	1	0	0	0	0	1	Interactive	30	3
Mail	1	1	1	1	1	1	Live Lectur	40	3
Mail	0	0	0	0	0	1	Interactive	38	3
Mail	0.5	1	1	1	0	1	Live Lectur	28	3
Mail	0	0	0	1	1	1	Recorded C	58	3

Mail	1	0	0	1	1	0 Recorded (	60	2
Mail	0	1	0	1	1	0 Live Lectur	56	3
None	0.5	0	0	1	1	1 Recorded (	30	3
Mail	1	0	0	0	0	1 Interactive	30	3
Mail	1	1	1	1	1	1 Live Lectur	40	3
Mail	1	1	0	0	0	0 Live Lectur	45	3
Mail	0	1	0	1	0	0 Live Lectur	35	3
Mail	1	1	0	1	1	1 Live Lectur	30	3
Mail	1	1	1	1	1	1 Live Lectur	28	3
Mail	1	1	1	0	1	0 Live Lectur	35	3
Mail	1	1	0	1	1	1 Live Lectur	30	3
Mail	1	1	0	1	1	0 Live Lectur	30	3
Mail	1	0	0	1	0	1 Recorded (	32	3
Mail	0	0	0	1	1	1 Recorded (	30	3
Mail	0.5	0	0	1	1	0 Recorded (	32	3
Mail	1	1	0	1	1	0 Live Lectur	28	3
Mail	1	1	1	1	1	0 Live Lectur	35	3
Mail	1	0	0	1	0	0 Recorded (	60	2
Mail	1	1	0	1	0	0 Live Lectur	32	3
Mail	0	1	1	1	0	0 Live Lectur	38	3
Mail	1	1	1	1	1	0 Live Lectur	40	3
Mail	0.5	0	0	1	1	1 Recorded (	38	3
Mail	1	1	0	1	0	0 Live Lectur	48	3
None	0	1	1	1	1	1 Live Lectur	34	3
Mail	1	0	0	1	0	1 Recorded (	60	2
Mail	1	0	0	1	1	0 Recorded (	30	3

Curr_Content	Curr_Live	Curr_Audio	Curr_Record	Curr_PowerPoint	Curr_Interactive	PlatformAccess	platform_L	E-Learning	THA
PowerPoint	1	0	1	1	0	2	1	1	1
Live Lecture	1	0	1	1	0	1	1	0	1
Live Lecture	1	0	1	1	0	1	1	1	1
Live Lecture	1	0	1	1	0	1	1	1	1
Live Lecture	1	0	1	1	0	1	1	0	1
Recorded Content	1	0	1	1	0	3	0	1	1
Recorded Content	1	0	1	1	0	1	1	0	1
Live Lecture	1	0	1	1	0	1	1	1	1
Live Lecture	1	0	1	1	0	2	0.5	1	0
Live Lecture	1	0	1	1	0	2	1	0	0
Live Lecture	1	0	1	1	0	3	0	1	1
Live Lecture	1	0	1	1	0	1	1	1	1
Live Lecture	1	0	1	1	0	3	1	1	1
Live Lecture	1	0	1	1	0	2	1	0	0
Live Lecture	1	0	1	1	0	1	1	0	1
Live Lecture	1	0	1	1	0	2	1	0	1
Live Lecture	1	0	1	1	0	2	1	0	1
Live Lecture	1	0	1	1	0	1	1	0	1
Live Lecture	1	0	1	1	0	1	1	0	1
Live Lecture	1	0	1	1	0	1	1	0	1
Live Lecture	1	0	1	1	0	2	1	1	1
Audio Lecture	1	0	1	1	0	1	1	1	0
Audio Lecture	1	0	1	1	0	1	1	1	0
Live Lecture	1	0	1	1	0	3	0.5	1	1
Live Lecture	1	0	1	1	0	2	1	1	1
Live Lecture	1	0	1	1	0	1	1	0	1
Others	1	0	1	1	0	2	1	-1	1
PowerPoint	1	0	1	1	0	1	1	0	0
Live Lecture	1	0	1	1	0	2	1	0	1
Live Lecture	1	0	1	1	0	2	1	1	1
Live Lecture	1	0	1	1	0	1	1	0	1
Live Lecture	1	0	1	1	0	2	0.5	0	1
Live Lecture	1	0	1	1	0	1	1	0	1
Live Lecture	1	0	1	1	0	2	1	0	1
Live Lecture	1	0	1	1	0	2	1	0	1
Live Lecture	1	0	1	1	0	3	0	0	1
Live Lecture	1	0	1	1	0	1	1	0	1
Live Lecture	1	0	1	1	0	1	1	0	1
Live Lecture	1	0	1	1	0	2	1	0	1
Live Lecture	1	0	1	1	0	2	1	1	1
Live Lecture	1	0	1	1	0	2	1	0	1
Live Lecture	1	0	1	1	0	3	0	1	1
Live Lecture	1	0	1	1	0	2	0.5	0	1
Live Lecture	1	0	1	1	0	1	1	1	1
Live Lecture	1	0	1	1	0	1	1	0	1
Live Lecture	1	0	1	1	0	1	1	0	1

Live Lectur	1	0	1	1	0	2	0.5	-1	1
Live Lectur	1	0	1	1	0	1	1	0	1
Live Lectur	1	0	1	1	0	3	0.5	0	1
Live Lectur	1	0	1	1	0	2	0.5	0	1
Live Lectur	1	0	1	1	0	1	1	0	1
Live Lectur	1	0	1	1	0	1	1	0	1
Live Lectur	1	0	1	1	0	1	1	0	1
Live Lectur	1	0	1	1	0	1	1	0	1
Live Lectur	1	0	1	1	0	2	0.5	1	1
Live Lectur	1	0	1	1	0	2	1	0	1
Live Lectur	1	0	1	1	0	3	0	1	1
Live Lectur	1	0	1	1	0	1	1	0	1
Live Lectur	1	0	1	1	0	1	1	0	1
Live Lectur	1	0	1	1	0	1	1	0	1
Live Lectur	1	0	1	1	0	2	1	0	1
Live Lectur	1	0	1	1	0	1	1	0	1
Live Lectur	1	0	1	1	0	1	1	0	1
Live Lectur	1	0	1	1	0	3	0	-1	1
Live Lectur	1	0	1	1	0	1	1	0	1
Live Lectur	1	0	1	1	0	1	1	0	1
Live Lectur	1	0	1	1	0	3	1	0	1
Live Lectur	1	0	1	1	0	1	1	0	1
Live Lectur	1	0	1	1	0	2	1	0	1
Live Lectur	1	0	1	1	0	2	0.5	1	1
Live Lectur	1	0	1	1	0	2	1	0	1

PracticeEx	ReadingM	QuizSoluti	TextBooks	Research P	Materials_	Tests_Assig	Result_Shc	AvgDur_Te	WeeklyHoi
0	0	0	0	0	THA(Take-l	20	72	30	6
1	0	1	0	0	THA(Take-l	20	72	30	1
1	1	1	0	0	THA(Take-l	20	72	30	3
1	1	1	0	0	THA(Take-l	20	72	30	1
1	1	1	1	0	THA(Take-l	20	72	30	2
1	1	1	1	1	THA(Take-l	20	72	30	3
1	1	1	1	0	THA(Take-l	20	72	30	4
1	0	0	0	0	THA(Take-l	20	72	30	5
1	1	0	0	0	Practice Ex	20	72	30	7
1	0	0	0	0	Practice Ex	20	72	30	10
0	1	0	0	0	THA(Take-l	20	72	30	1
1	1	1	0	0	THA(Take-l	20	72	30	4
0	1	1	1	0	THA(Take-l	20	72	30	10
1	0	0	0	0	Practice Ex	20	72	30	10
0	1	1	0	0	THA(Take-l	20	72	30	4
0	0	0	0	0	THA(Take-l	20	72	30	10
1	0	1	0	0	THA(Take-l	20	72	30	10
1	0	0	0	0	THA(Take-l	20	72	30	2
1	1	1	1	0	THA(Take-l	20	72	30	1
1	1	1	0	0	THA(Take-l	20	72	30	1
0	0	0	0	0	THA(Take-l	20	72	30	6
1	0	0	0	0	Practice Ex	20	72	30	6
0	1	0	0	0	Reading M	20	72	30	4
1	1	1	1	1	THA(Take-l	20	72	30	9
0	1	0	0	0	THA(Take-l	20	72	30	5
1	0	0	0	0	THA(Take-l	20	72	30	5
0	1	1	0	1	THA(Take-l	20	72	30	7
0	1	1	1	0	Reading M	20	72	30	10
1	1	1	1	0	THA(Take-l	20	72	30	4
0	0	1	0	0	THA(Take-l	20	72	30	5
0	1	1	0	0	THA(Take-l	20	72	30	2
1	1	1	0	0	THA(Take-l	20	72	30	2
1	1	1	0	0	THA(Take-l	20	72	30	1
1	1	1	0	0	THA(Take-l	20	72	30	1
1	1	1	0	0	THA(Take-l	20	72	30	3
1	1	1	0	0	THA(Take-l	20	72	30	2
1	1	1	0	0	THA(Take-l	20	72	30	1
1	1	1	0	0	THA(Take-l	20	72	30	3
1	1	1	0	0	THA(Take-l	20	72	30	4
1	1	1	0	0	THA(Take-l	20	72	30	1
0	1	1	0	0	THA(Take-l	20	72	30	1
1	1	1	0	0	THA(Take-l	20	72	30	2
1	1	1	0	0	THA(Take-l	20	72	30	1
1	1	1	0	0	THA(Take-l	20	72	30	1
1	1	1	0	0	THA(Take-l	20	72	30	2
1	1	1	0	0	THA(Take-l	20	72	30	3

1	1	1	0	0 THA(Take-I	20	72	30	4
1	1	1	0	0 THA(Take-I	20	72	30	2
1	1	1	0	0 THA(Take-I	20	72	30	1
1	1	1	0	0 THA(Take-I	20	72	30	1
1	1	1	0	0 THA(Take-I	20	72	30	2
1	0	1	0	0 THA(Take-I	20	72	30	1
1	1	1	0	0 THA(Take-I	20	72	30	2
1	1	1	0	0 THA(Take-I	20	72	30	2
1	1	1	0	0 THA(Take-I	20	72	30	2
1	1	1	0	0 THA(Take-I	20	72	30	1
1	1	1	0	0 THA(Take-I	20	72	30	2
1	1	1	0	0 THA(Take-I	20	72	30	2
1	1	1	0	0 THA(Take-I	20	72	30	2
1	1	1	0	0 THA(Take-I	20	72	30	1
1	1	1	0	0 THA(Take-I	20	72	30	2
1	1	1	0	0 THA(Take-I	20	72	30	3
1	1	1	0	0 THA(Take-I	20	72	30	1
0	1	0	0	0 THA(Take-I	20	72	30	7
1	1	1	0	0 THA(Take-I	20	72	30	1
1	1	1	0	0 THA(Take-I	20	72	30	3
1	1	1	0	0 THA(Take-I	20	72	30	2
1	1	1	0	0 THA(Take-I	20	72	30	2
1	1	1	0	0 THA(Take-I	20	72	30	2
1	1	1	0	0 THA(Take-I	20	72	30	4
1	1	1	0	0 THA(Take-I	20	72	30	3
1	1	1	0	0 THA(Take-I	20	72	30	1

Portal_Log CourseProgress_Satisfaction

3	1
2	0
4	1
1	1
1	1
2	0
3	1
3	0
2	0
3	1
0	0
2	0
10	0
3	1
3	0
4	0
2	1
2	0
1	1
1	0
1	0
6	1
3	1
9	0
1	0
1	1
8	0
2	0
3	0
5	1
3	0
1	0
3	0
1	0
2	0
1	0
2	0
1	0
3	1
2	0
3	0
1	0
2	0
3	0
1	0
3	0

5	0
1	0
2	0
2	0
3	0
3	0
2	0
1	0
2	0
3	0
4	0
3	0
1	0
1	0
1	0
2	0
1	0
2	1
2	0
4	0
3	0
3	0
3	0
4	0
4	0
2	0