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1 Introduction - Purpose:

Grade level warning use case is a way to look at students who are doing at an average level and are hence not flagged by the teachers and p performances

This is done by using forecasting (Holt's method) to capture any trends in their performances over time and predict for future 3 tests. If the pre students are flagged

2 Toggling the raw codes:

Out[1]:

Click here to toggle on/off the raw code.

3 Importing Libraries and connecting to SQL:

3.1 Connecting to SQL server

Enter password to connect to the Samarth Staging server :

```
........
```

```
Connected successfully
```

4 Use Case - Grade-Level Warning :

Grade level warning use case is a way to look at students who are doing at an average level and are hence not flagged by the teachers and p performances

This is done by using forecasting (Holt's method) to capture any trends in their performances over time and predict for future 3 tests. If the pre students are flagged

4.1 Data considered - Whatsapp test results:

We do not have class assessment data for more than 3 tests for the students and forecasting is unreliable with such a low number of data po

Hence, we are considering whatsapp test results are for building the forecasting models. First, we can check if the whatsap results are a gooc performance. We do this by looking at the correlation between the whatsapp marks and the student class assessment results

Checking correlation of the scores of the Whatsapp test vs the assessment results for Grade 8 of Shimla:

```
Correlation :   0.32
```

Correlation is low for thes test results. This was done by taking average of the assessments test marks and checking it against the average o subject for common students (around ~1200)

4.2 Building the Forecasting model:

4.2.1 Looking at the dataset:

Though the correlation value is low, we build out the forecasting model, hoping to use the insights and logics later on a more reliable dataset

Whatsapp data for a few weeks is pulled and pivoted. We only consider students who attempeted tests in all the weeks for now.

A sample of the table created is shown below. Week 10-25 are considered because this subset is well populated

Out[63]:

week	studentid	grade_number	subject	10	11	12	13	14	15	16	17	18	19	20	21	22	23
0	7240	2	Maths	75.0	87.0	87.0	75.0	100.0	87.0	75.0	100.0	100.0	100.0	75.0	100.0	100.0	81.0
1	43017	3	Maths	71.0	75.0	62.0	62.0	87.0	50.0	37.0	69.0	66.0	84.0	100.0	87.0	75.0	54.0
2	47591	2	Maths	85.0	100.0	70.0	61.0	65.0	87.0	56.0	87.0	62.0	62.0	62.0	100.0	94.0	50.0
3	58698	3	Maths	57.0	87.0	75.0	87.0	75.0	100.0	62.0	50.0	100.0	100.0	100.0	100.0	75.0	87.0
4	60659	2	Maths	100.0	100.0	60.0	100.0	71.0	87.0	62.0	100.0	94.0	68.0	100.0	100.0	100.0	100.0
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12551	1334190	1	Maths	87.0	62.0	87.0	75.0	87.0	50.0	87.0	87.0	87.0	100.0	87.0	87.0	50.0	100.0
12552	1334227	1	Maths	100.0	100.0	87.0	75.0	100.0	75.0	100.0	87.0	87.0	100.0	100.0	100.0	100.0	100.0
12553	1334775	1	Maths	100.0	75.0	100.0	50.0	100.0	75.0	100.0	62.0	100.0	100.0	87.0	100.0	100.0	75.0
12554	1336938	1	Maths	87.0	75.0	75.0	62.0	100.0	37.0	75.0	75.0	87.0	75.0	50.0	75.0	50.0	37.0
12555	1337924	1	Maths	62.0	87.0	100.0	87.0	75.0	62.0	75.0	75.0	87.0	100.0	50.0	25.0	37.0	62.0

12556 rows × 19 columns

4.3 Data selection and results:

Weeks 10- 22 are considered and Holt's method is used to forecast on the next 3 weeks results on this basis. The results show the classifica
students are will fail the next tests:

```
Avg. Precision:  0.5667

Avg. Recall:  0.6456

F1 Score:  0.2429

Positive class is student failure (below 45 marks)
```