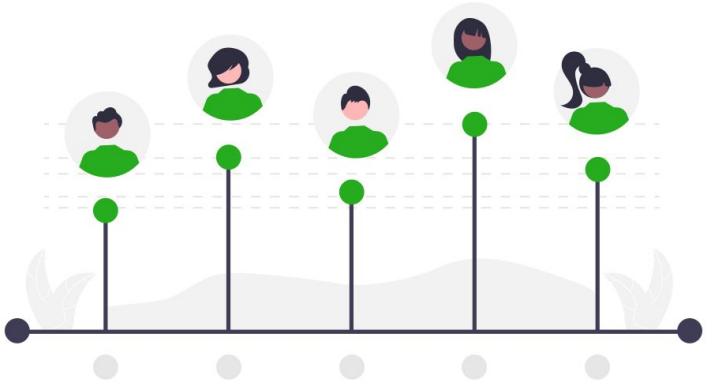
PalTaqdeer

AI-Driven Student Success Forecaster.

What If?

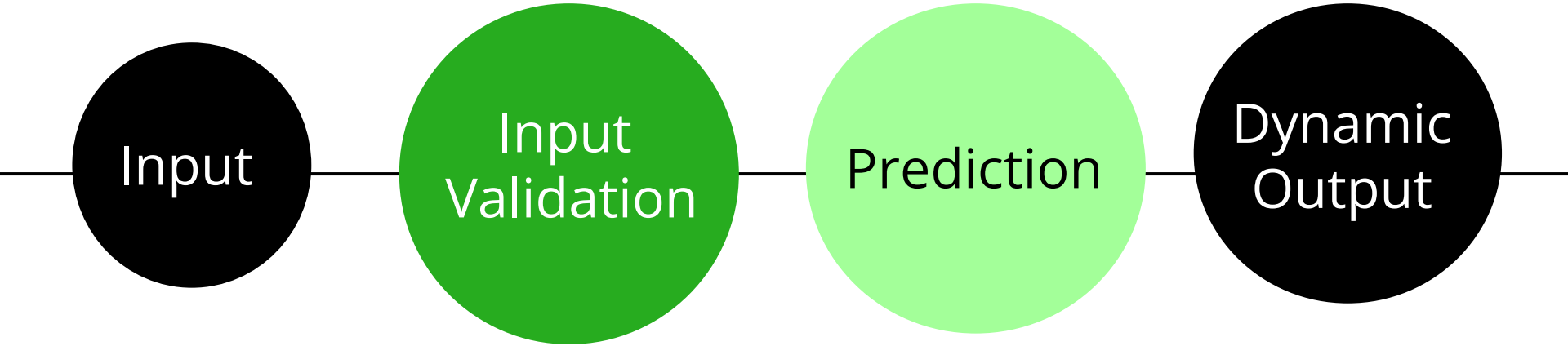
- What if students grades could be predicted?
  - Instead of sitting exams, the class of 2020 in England were assigned grades based on prediction by their teachers.
  - Remember? Covid-19

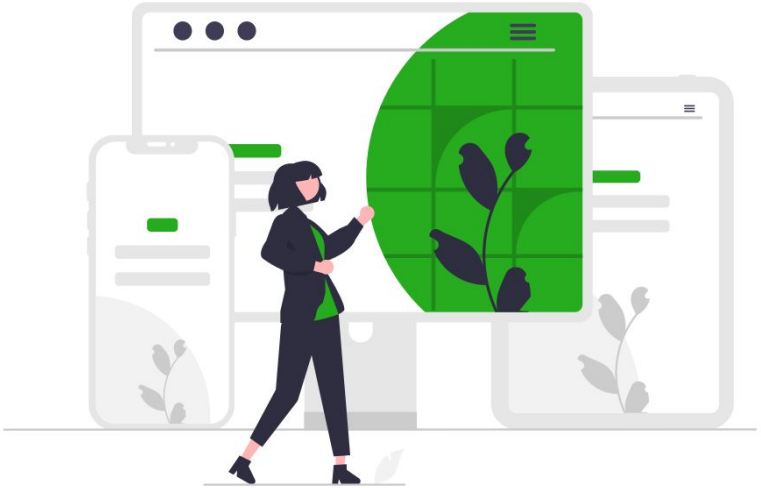


About PalTaqdeer

- PalTaqdeer is an AI-Driven Student Success Predictor website.
- Whether you are a student, a teacher, or a parent, PalTaqdeer helps you to get a valuable insight about the final grade.
- All you need to do is simply submit a form and get the result as many times as desired!

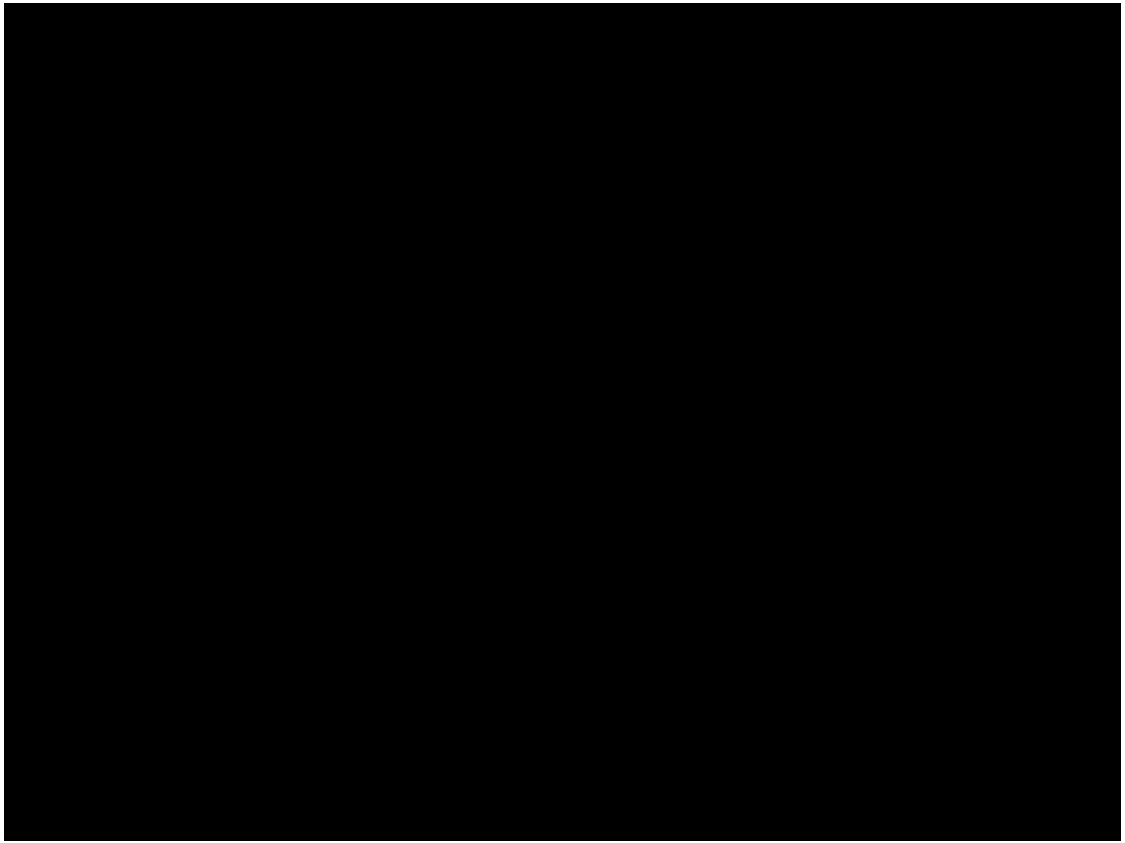
How does it work?





Web Development

Let’s watch a Demo



“Congratulations” Output

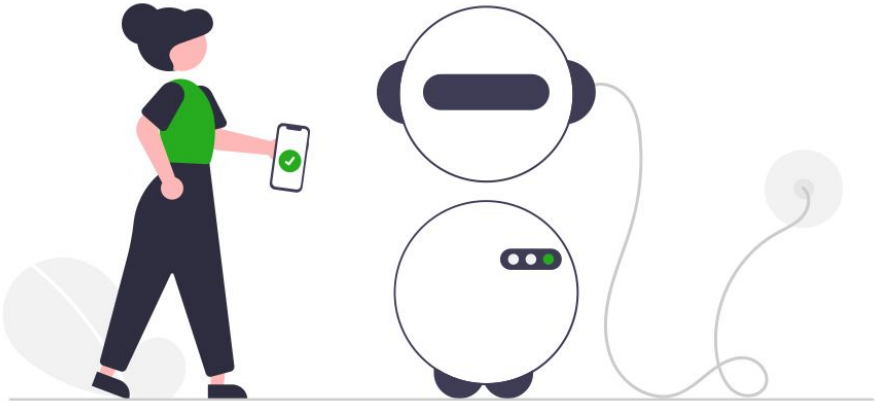
This is an example were the user have got a mark in the range (11-20). Congratulating them.

“Hard Luck” Output

This is an example were the user have got a mark in the range (0-10). Wishing them hard luck.

Form Validation

- If the user have inputted invalid inputs out of range for example or non-numerical they are alerted.
- If the user didn’t fill all the required fields they are alerted, to fill the data.

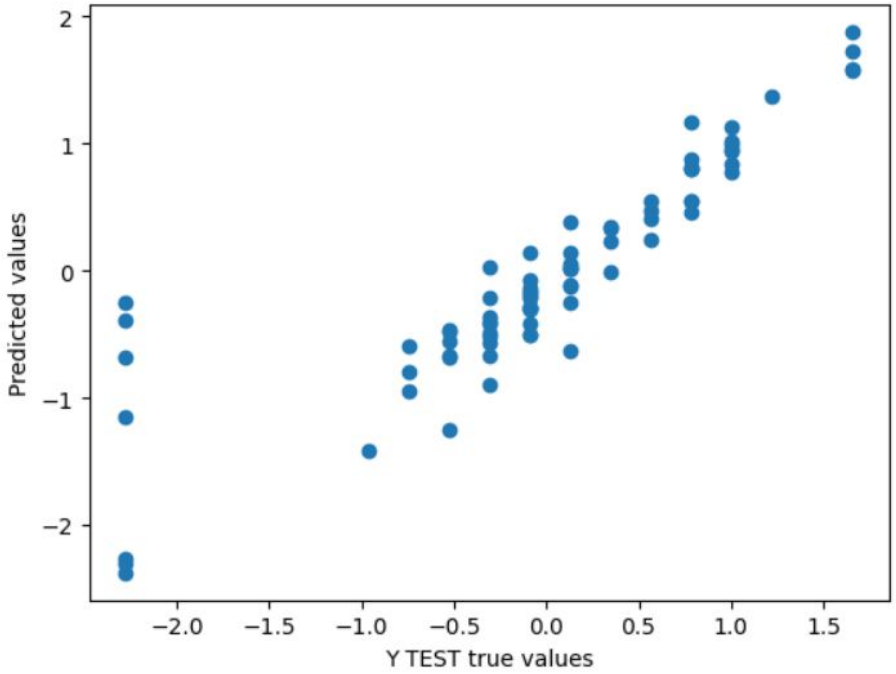


AI Model

Linear Regression

- The task is a regression task, the expected output is a continuous value.
- Linear regression algorithm is used to predict the final grade.
- A strong assumption is made about the data:
  - Linear relationship between Y and Each X.

Measurement	Value
R-squared	0.80
MSE	4.4
MAE	1.2
RMSE	2.1



Performance Measurements

The build Linear Regression model have performed well based on these performance measures.

Predicted Vs. Actual Values

A clear linear trend is observed. The predictions are closely aligned with the actual

Data Analysis

Is Our Data Reliable?

Detection and Handling were performed on these:

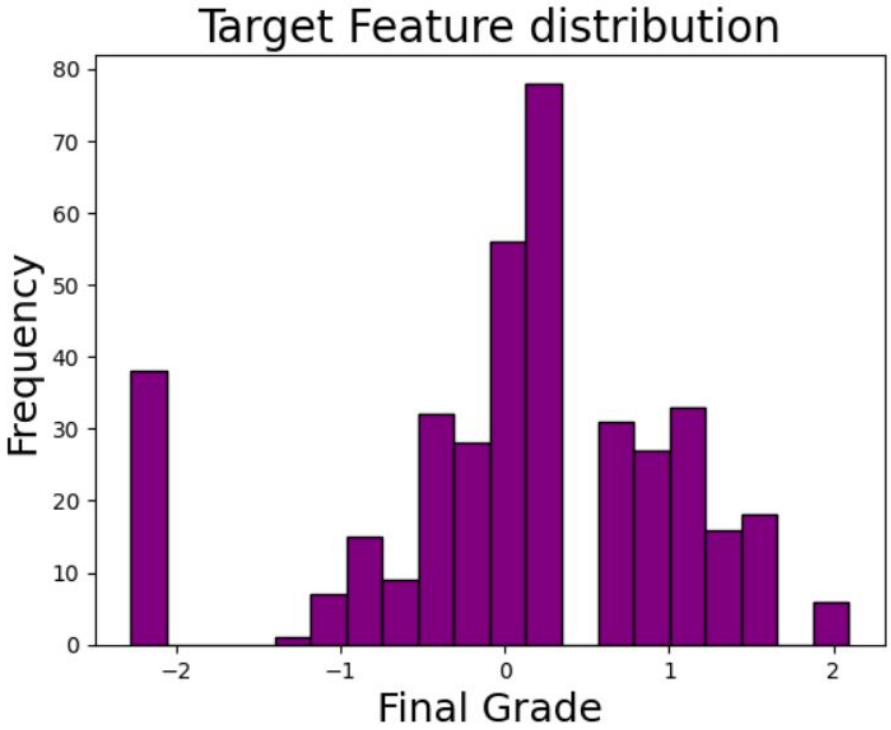
- **Outliers**
  - Detected in 10 columns. Using box-plot and IQR
  - It was observed that they are possible scenario cases to occur for example:
    - Father's Education could be higher
    - Students can score very high marks and even get bonuses.
- **Missing values**
  - None were detected. Using built-in method (isnull) and heatmap.
- **Duplicated rows**
  - None were detected. Using built-in method (duplicated).

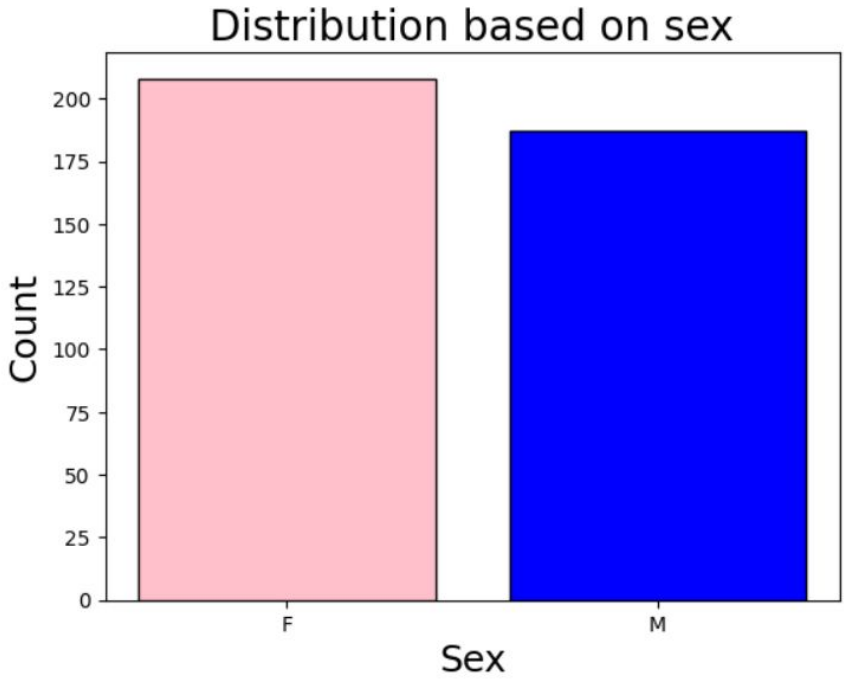
This conducts that the data was reliable.

Secrets Revealed

We have tortured the data until it confessed all of it’s secrets.

- 395 Rows, 33 Column
- To understand the target feature (G3):
  - Applied (Dummy encoding technique) to nominal and binary.
  - Applied (The standard Features scaling technique) due to dominant ranges.
  - We studied the correlation and dropped the non correlated features based on a threshold 0.12.
  - There exists a high positive correlation between G1, G2, G3.
- It is noticed that G3 (final grade) had high negative correlation with failures feature.



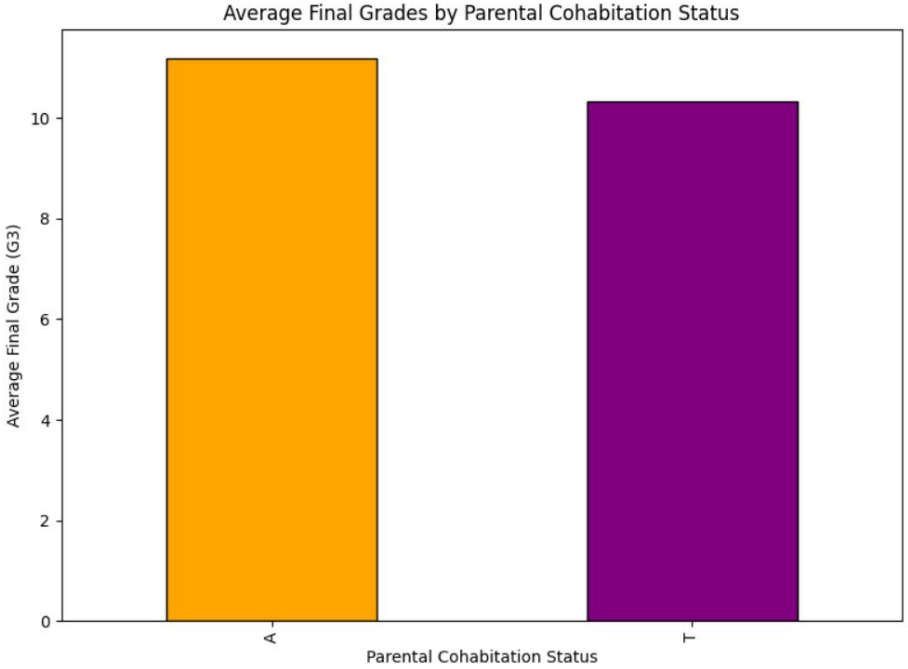


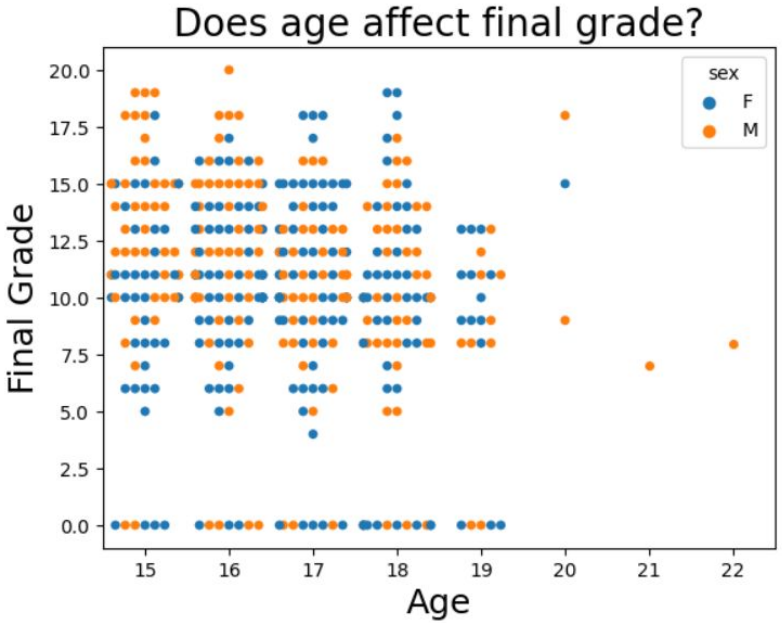
Distribution of G3

The Target class has a normal distribution with some outliers noticed in the visualization.

Distribution of Sex

It is observed that the females are slightly more than the males.





Parental Cohabitation

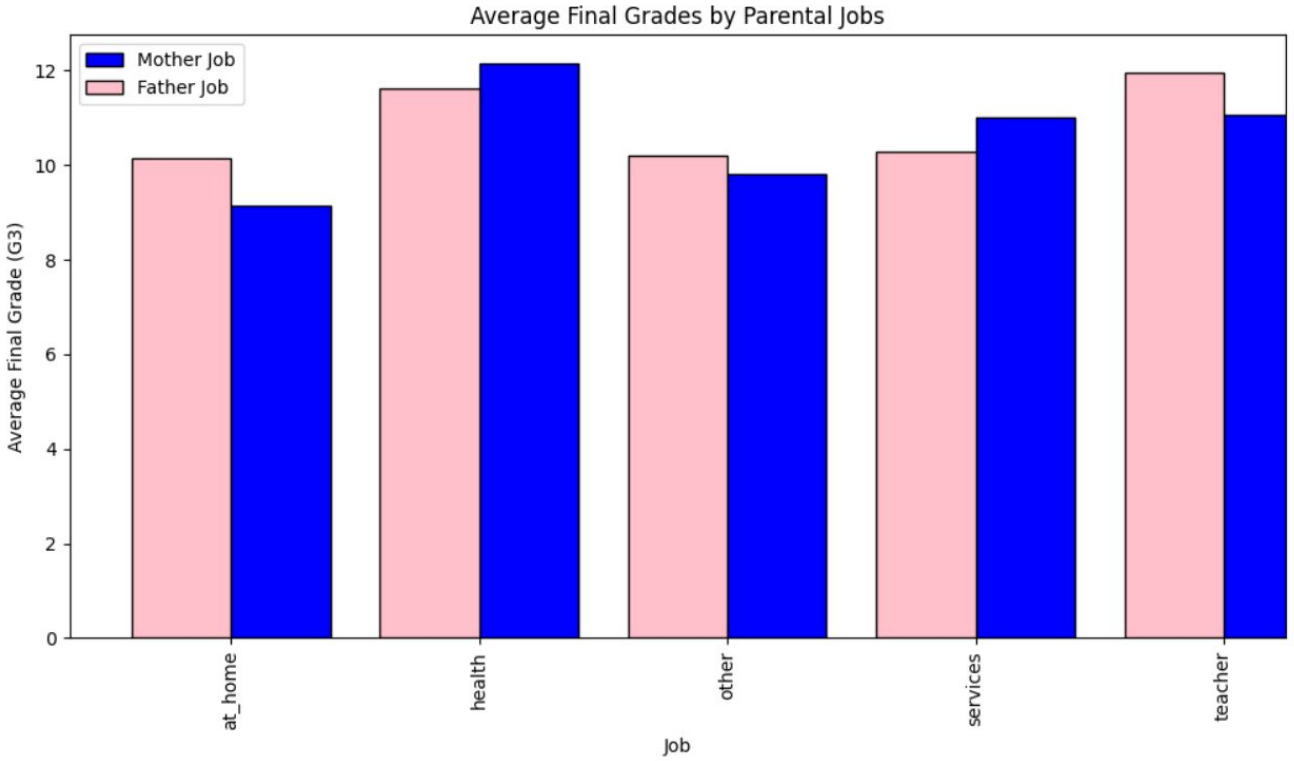
The average grades were higher when parents were apart compared to when they were together.

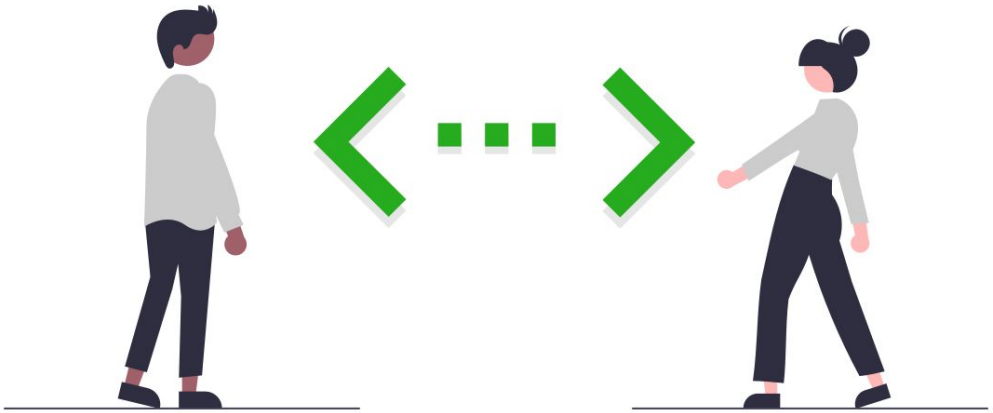
Age Vs. G3

It is observed that higher ages may score lower final grades (21, 22). The most age that scored (0) is 18.

Parental Jobs and The Final Grade

- Both genders higher averages where when their parents worked on health sector.
- Females seem to have the highest grades when their parents are teachers.
- Males had the lowest when their parents are at home.





Technologies

Technologies used

- Pandas, Sklearn, Pickle, Matplotlib, Seaborn
- Co-Lab
- Flask, HTML, CSS
- Visual Code
- Github
- Slack, Drive, Google meet

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