Code Questions

What does `fit_transform()` do ?

It's a method used in `scikit-learn` that combines two operations `fit` and `transform` considered as a **preprocessing** step. we use `fit_transform()` is used on <u>Training Data</u> so we can **scale** the data(More details in <u>Feature Scaling</u>) and learn the scaling **parameters** of that data (mean, variance)

- The `fit` methods is calculating the mean, variance, std,min and max of each of the **predictors**(features)
- The `transform` uses the mean and variance that was calculated from `fit` method to transform our test data, scale the data which helps gradient-based algorithms

If the `fit` method is used on the test data it will compute the mean and variance and scales the features and will let the model learn about the data which goes against of giving predictions based on a new unseen data since the model will learn about how the data looks like

the `model.fit` is quite different than the `fit_transform()` one since the first one is for the algorithm to learn the relationship between the features and the observations which also estimates the **coefficients** for the model