**Interpretation analysis for Lab 1 :**

Data Preprocessing: The dataset student\_records is read and then some transformations are applied:

pass\_binary\_indicator: A binary indicator is created based on whether the final\_result is "Pass" or not.

pass\_status\_factor: The binary indicator is converted into a factor.

disability\_status\_factor: The disability status is also converted into a factor.

imd\_band\_factor and imd\_band\_integer: The imd\_band variable is converted into a factor and then into an integer.

Data Splitting: The dataset is split into training and testing sets using initial\_split() function from tidymodels.

Recipe Specification: A recipe is formulated using recipe() function, specifying the formula for logistic regression with pass\_status\_factor as the outcome variable and disability\_status\_factor and imd\_band\_integer as predictors.

Model Specification: A logistic regression model is specified using logistic\_reg() function, and then the model engine and mode are set using set\_engine() and set\_mode() functions, respectively.

Workflow Specification: A workflow is constructed by adding the model and recipe using workflow() function, and then adding the model and recipe using add\_model() and add\_recipe() functions.

Model Training: The workflow is fit to the training data using fit() function.

Model Testing: The testing data is split using initial\_split(), and then the model is tested using the testing data split with last\_fit() function.

Predictions: Predictions are collected using collect\_predictions().

Accuracy: The accuracy of the model is calculated by checking if the predicted class matches the actual pass\_status\_factor.

Interpretation:

Model Performance: The final fitted model object final\_results contains information about the model's performance on the testing data. You can assess the model's accuracy and other performance metrics from this object.

Predictions: The predictions obtained from the model can be further analyzed to understand how well the model is performing in predicting pass/fail outcomes based on disability status and IMD band.

Feature Importance: Since this is a logistic regression model, you can also examine the coefficients of the predictors (disability\_status\_factor and imd\_band\_integer) to understand their importance in predicting the pass/fail outcome.

Further Analysis: You can visualize the results, such as plotting the predicted versus actual outcomes or creating ROC curves to assess the model's performance in more detail.