Model Development Phase Template

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| Date | 22 April 2024 |
| Team ID | Team-738178 |
| Project Title | Envisioning Success : Predicting University Scores With Machine Learning |
| Maximum Marks | 6 Marks |

**Model Selection Report**

In the forthcoming Model Selection Report, various models will be outlined, detailing their descriptions, hyperparameters, and performance metrics, including Mean Squared Error or R Squared. This comprehensive report will provide insights into the chosen models and their effectiveness.

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| **Model** | **Description** | **Hyperparameters** | **Performance Metric** |
| Linear Regression | Linear regression is a simple and widely used statistical model that predicts a continuous target variable based on linear relationships with input features. It is easy to interpret and serves as a baseline model for many predictive tasks. | - | MSE = 28.92  R Squared = 0.46 |
| Lasso Regression | Lasso regression is a linear regression model that includes a penalty for non-zero coefficients, encouraging a sparse model by setting less important coefficients to zero. It is useful for feature selection and regularization. | - | MSE = 28.89  R Squared = 0.46 |
| SVR | SVR is a machine learning model that uses support vectors to fit a hyperplane that best predicts continuous target variables. It is particularly useful for handling complex, non-linear relationships in the data. | - | MSE = 26.88  R Squared = 0.5 |

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| Random Forest | Random Forest is an ensemble learning method that uses multiple decision trees to improve prediction accuracy. It averages the predictions of these trees to provide robust and reliable results, reducing the risk of overfitting. | Hyperparameters  Used | MSE = 1.68  R Squared = 0.97 |
| Decision  Tree | Decision Tree is a model that creates a tree-like structure for decision-making by splitting data based on specific features. It is straightforward to interpret and useful for understanding how features influence predictions. | Hyperparameters  Used | MSE = 3.16  R Squared = 0.94 |