**Model Development Phase Template**

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| Date | 15 March 2024 |
| Team ID | xxxxxx |
| Project Title | Human Resource Management: Predicting Employee Promotions Using 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 Accuracy or F1 Score. This comprehensive report will provide insights into the chosen models and their effectiveness.

**Model Selection Report:**

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| **Model** | **Description** | **Hyperparameters** | **Performance Metric (e.g., Accuracy, F1 Score)** |
| Decision Tree | Simple tree structure; interpretable, captures non-linear relationships, suitable for initial insights into promotion patterns | random\_state=42 | Accuracy Score:0.94 |
| Random Forest | Ensemble of decision trees; robust, handles complex relationships, reduces overfitting, and provides feature | random\_state=42,  N\_estimators=100 | Accuracy Score:0.96 |
| K-Nearest Neighbors | Classifies based on nearest neighbors; adapts well to data patterns, effective for local variations in promotion criteria | n\_neighbors=5 | Accuracy Score:0.91 |
| Gradient Boosting | Gradient boosting with trees; optimizes predictive performance, handles complex relationships, and is suitable for accurate promotion predictions | random\_state=42 | Accuracy Score:0.87 |