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| Semester | TE Sem VI EXCS |
| Subject | ML Laboratory |
| Laboratory Professor | Prof. Uma Jaishankar |

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| Student Name |  |
| Roll Number |  |

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| **Experiment**  **Number** | 8 **Match your Partner** |
| **Problem Statement:** | A popular dating app wants to introduce a new feature that predicts the best compatible life partner for users based on their zodiac signs, personality traits, and preferences. The app has collected a dataset from its users, including responses to personality quizzes, interests, lifestyle choices, and their self-reported zodiac signs. The goal is to build a predictive model that can accurately match users with their most compatible partners based on zodiac compatibility and shared traits. |
| **Tasks** | **Task 1 (Dimensionality Reduction):**   * + Use PCA to reduce the number of features in the dataset while retaining the most important information.   + Visualize the reduced dataset to identify patterns or clusters associated with high compatibility between zodiac signs.   **Task 2 (Model Building):**   * + Build a compatibility prediction model using the reduced dataset from PCA.   + Alternatively, use ensemble learning (e.g., Random Forest, Gradient Boosting, or Stacking) to combine multiple models and improve prediction accuracy.   **Task 3 (Interpretation and Insights):**   * + Analyze the results to determine which personality traits, preferences, or zodiac sign combinations are most strongly associated with high compatibility.   + Provide actionable insights for the app to improve matchmaking and user satisfaction. |
| **Approach** | Consider Two Approaches   1. **Principal Component Analysis (PCA):** To reduce the dimensionality of the dataset and identify the most important features for compatibility. 2. **Ensemble Learning:** To combine multiple models for improved accuracy and robustness in predicting compatibility |
| **Data Sets** |  |
| **Program** |  |
| **Output**  **Screen shots** |  |
| **Applications** |  |