**Design Research Process: Medicine System**

1. **Introduction**

The aim of this project is to develop a machine learning-based system that can predict diseases based on symptoms provided by the user. This system aims to facilitate early diagnosis and appropriate medical intervention.

1. **Literature Review**

Previous studies have shown the potential of machine learning in healthcare for tasks such as disease prediction, diagnosis, and treatment recommendation. However, challenges such as data quality, model interpretability, and real-world application remain.

1. **Methodology**
2. Data Collection and Preparation

- The dataset consists of 4920 samples with 133 features, including symptoms and disease prognosis.

- Preprocessing steps included cleaning the data, handling missing values, and encoding categorical variables.

1. Model Selection

- Various models were considered, including Support Vector Machine (SVM), Decision Trees, and Random Forest.

- SVM was selected due to its ability to handle high-dimensional data effectively.

1. Training and Evaluation

- The data was split into training, validation, and test sets.

- Evaluation metrics included accuracy, precision, and recall.

1. **Implementation**

The system is implemented in Python using libraries such as pandas, scikit-learn, and Flask for the web interface. Key functionalities include:

- Processing user input symptoms.

- Predicting the disease using the trained SVM model.

- Providing detailed information about the predicted disease.

1. **Results**

The model achieved an accuracy of X% on the test set. Visualization tools such as confusion matrix and ROC curve demonstrated the model's effectiveness in disease prediction.

1. **Conclusion**

This project successfully developed a machine learning-based system for disease prediction. Future work includes enhancing model accuracy, incorporating additional data, and expanding system functionalities.

1. **References**

- List of all the references used.