

1. A bank wants to predict whether a loan applicant will default based on credit score, income, and past loan history. What type of ML problem is this, and what steps would you take to solve it?

**Problem Type: Supervised- Regression**

**Step-by-step logic:**

**Data Collection** – Collect the required data from the bank

**Data Preprocessing** – update the null values and convert categorical data to numerical.

**Split Input and Output** – Split Independent and Dependent variable

**Split train and test set** – Split the train set to train the model and test set to test the model.

**Choose Algorithm** – Use Regression Algorithms like Linear Regression, SVM

**Model Creation** – Fit the model

**Evaluation Metrics** – Based on the R2 score save the best model

2. A retail store wants to predict the demand for different products to optimize inventory levels. What type of ML problem is this, and what steps would you take to solve it?

**Problem Type: Supervised- Regression**

**Step-by-step logic:**

**Data Collection** – Collect the required data from the retail store

**Data Preprocessing** – update the null values and convert categorical data to numerical.

**Split Input and Output** – Split Independent and Dependent variable

**Split train and test set** – Split the train set to train the model and test set to test the model.

**Choose Algorithm** – Use Regression Algorithms like Linear Regression, SVM

**Model Creation** – Fit the model

**Evaluation Metrics** – Based on the R2 score save the best model

3. A factory wants to detect whether a manufactured product is defective based on sensor readings and quality control data. What type of ML problem is this, and what steps would you take to solve it?

**Problem Type: Supervised- Classification**

**Step-by-step logic:**

**Data Collection** – Collect the required data from the factory

**Data Preprocessing** – update the null values and convert categorical data to numerical.

**Split Input and Output** – Split Independent and Dependent variable

**Split train and test set** – Split the train set to train the model and test set to test the model.

**Choose Algorithm** – Use Classification Algorithms like Random Forest

**Model Creation** – Fit the model

**Evaluation Metrics** – Based on the confusion Matrix score save the best model

4. A healthcare provider wants to analyze patient symptoms and classify them into different disease categories. What type of ML problem is this, and what steps would you take to solve it?

**Problem Type: Supervised- Classification**

**Step-by-step logic:**

**Data Collection** – Collect the required data from the healthcare

**Data Preprocessing** – update the null values and convert categorical data to numerical.

**Split Input and Output** – Split Independent and Dependent variable

**Split train and test set** – Split the train set to train the model and test set to test the model.

**Choose Algorithm** – Use Classification Algorithms like Random Forest

**Model Creation** – Fit the model

**Evaluation Metrics** – Based on the confusion Matrix score save the best model

5. An e-commerce company wants to identify and remove fake reviews posted by bots or fraudsters. What type of ML problem is this, and what steps would you take to solve it?

**Problem Type: Supervised- Classification**

**Step-by-step logic:**

**Data Collection** – Collect the required data

**Data Preprocessing** – update the null values and convert categorical data to numerical using sklearn TF-IDF, Stop Words Removal.

**Split Input and Output** – Split Independent and Dependent variable

**Split train and test set** – Split the train set to train the model and test set to test the model.

**Choose Algorithm** – Use Classification Algorithms like Random Forest, svm

**Model Creation** – Fit the model

**Evaluation Metrics** – Based on the confusion Matrix score save the best model

6. A financial firm wants to predict stock price movements based on historical price data and market indicators. What type of ML problem is this, and what steps would you take to solve it?

**Problem Type: Supervised- Regression**

**Step-by-step logic:**

**Data Collection** – Collect the patient details

**Data Preprocessing** – update the null values and convert categorical data to numerical.

**Split Input and Output** – Split Independent and Dependent variable

**Split train and test set** – Split the train set to train the model and test set to test the model.

**Choose Algorithm** – Use Regression Algorithms like Decision Tree, Gradient Boosting

**Model Creation** – Fit the model

**Evaluation Metrics** – Based on the R2 score save the best model

7. A social media platform wants to detect fake user accounts based on user activity and profile data. What type of ML problem is this, and what steps would you take to solve it?

**Problem Type: Supervised- Classification**

**Step-by-step logic:**

**Data Collection** – Collect the required data

**Data Preprocessing** – update the null values and convert categorical data to numerical

**Split Input and Output** – Split Independent and Dependent variable

**Split train and test set** – Split the train set to train the model and test set to test the model.

**Choose Algorithm** – Use Classification Algorithms like Random Forest, Boost Algorithm

**Model Creation** – Fit the model

**Evaluation Metrics** – Based on the confusion Matrix score save the best model

8. A marketing agency wants to segment customers into different groups based on their purchasing behavior. What type of ML problem is this, and what steps would you take to solve it?

**Problem Type: Unsupervised- Clustering**

**Step-by-step logic:**

**Data Collection** – Collect the customers data

**Data Preprocessing** – update the null values and convert categorical data to numerical.

**Split Input** – Split Independent variable.

**Choose Algorithm** – Use Clustering Algorithms like kmeans, DBScan

**Train Model** – Apply clustering algorithm to group the customers based on purchase.

9. A geospatial research team wants to analyze satellite images to classify different land types (forest, water, urban). What type of ML problem is this, and what steps would you take to solve it?

**Problem Type: Supervised- Classification**

**Step-by-step logic:**

**Data Collection** – Collect the required data

**Data Preprocessing** – update the null values and encode categorical data to numerical.

**Split Input and Output** – Split Independent and Dependent variable

**Split train and test set** – Split the train set to train the model and test set to test the model.

**Choose Algorithm** – Use Classification Algorithms like Random Forest, svm

**Model Creation** – Fit the model

**Evaluation Metrics** – Based on the confusion Matrix score save the best model

10. A streaming service wants to predict which users are likely to cancel their subscriptions. What type of ML problem is this, and what steps would you take to solve it?

**Problem Type: Supervised- Classification**

**Step-by-step logic:**

**Data Collection** – Collect the required data

**Data Preprocessing** – update the null values and encode categorical data to numerical.

**Split Input and Output** – Split Independent and Dependent variable

**Split train and test set** – Split the train set to train the model and test set to test the model.

**Choose Algorithm** – Use Classification Algorithms like Random Forest, svm

**Model Creation** – Fit the model

**Evaluation Metrics** – Based on the confusion Matrix score save the best model