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?

   Identify the problem type: Classification

   Step by step logic:

   Collect data: Collect the data for credit score, Account statement, income per month, past loan history.

   Preprocess data: Handel the missing value, Change the categorical data to numerical data and split the training data and test data.

   Choose algorithm: Use Random Forest, logistic regression, decision tree.

   Train model: Train the model using the training data.

   Evaluate Model: Use Recall and f1-score.

   Make predictions: Give the new user data to find the default loan application.

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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?

   Identify the problem type: Regression

   Step by step logic:

   Collect data: Gather the sales data, seasonal trends, past sales history.

   Preprocess data: Handel the missing value, Change the categorical data to numerical data.

   Choose algorithm: Use linear regression and random forest

   Train model: Train model using historical demand data.

   Evaluate Model: Calculate root mean square error and r-score.

   Make predictions: Forest for upcoming sales period.

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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?

   Identify the problem type: Classification

   Step by step logic:

   Collect data: Get the data from sensors, get the defected label and production details.

   Preprocess data: Handle the missing value, change the categorical data

   Choose algorithm: Use decision tree and support vector machine algorithm, split the training data and test data.

   Train model: Train the model using the training data from production details

   Evaluate Model: Use f1-score, precision, recall

   Make predictions: Now detect the defective product from the production.

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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?

   Identify the problem type: Classification

   Step by step logic:

   Collect data: Get the patient medical history, analyze patient symptoms and age

   Preprocess data: Handle the missing value, change the categorical data in medical history.

   Choose algorithm: Use naive bayes and random forest algorithms.

   Train model: Fit the model using the labeled data.

   Evaluate Model: Calculate the accuracy, f1-score and confusion matrix

   Make predictions: Now they give the patient result as the input to find the different disease.

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?

   Identify the problem type: Classification

   Step by step logic:

   Collect data: Get the input as user credentials and verify that if the user is originally perched from our e-commerce website

   Preprocess data: Handle the missing value and find and remove the suspicious and negative words which they are using.

   Choose algorithm: Use naive bayes and logistic regression algorithm.

   Train model: Fit the model using the training data set

   Evaluate Model: Calculate the accuracy and confusion matrix.

   Make predictions: Now remove the fake review from those comments.
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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?

   Identify the problem type: Regression

   Step by step logic:

   Collect data: Gather data historical stock price, market indicator.

   Preprocess data: Handel the missing value, Change the categorical data to numerical data.

   Choose algorithm: Use Random Forest algorithm

   Evaluate Model: Use root means square error

   Make predictions: Forecast future stock price.

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?

   Identify the problem type: Classification

   Step by step logic:

   Collect data: Get the data from the user activity like profile data, user credential and user activity

   Preprocess data: Handle the missing values, split the training data and test data

   Choose algorithm: Use Random Forest and support vector machine algorithm

   Train model: Train the model using the training data

   Evaluate Model: Calculate the f1 score and precision for the accuracy

   Make predictions: Give the input to find the given details of the user account to detect fake or original.

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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?

   Identify the problem type: Clustering

   Step by step logic:

   Collect data: Get the user bill history and how many times they are buying the things.

   Preprocess data: Handle the missing values, split the training data and test data

   Choose algorithm: Use KMean algorithm

   Evaluate Model: Use Elbow Method.

   Make predictions: Now we can segment the customers.

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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?

   Identify the problem type: Classification

   Step by step logic:

   Collect data: Give the input as the satellite images to classify

   Preprocess data: Remove the noise and normalize the pixel values, split the training and test set

   Choose algorithm: Use random forest and support vector machine

   Train model: Train the model using training images

   Evaluate Model: Use accuracy and confusion matrix

   Make predictions: Now give the test images to the land type.
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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?

    Identify the problem type: Classification

    Step by step logic:

    Collect data: Get the user subscription history, watch log and engagement

    Preprocess data: Handel the missing value

    Choose algorithm: Use Random Forest and logistic regression algorithm

    Train model: Train the model using training data.

    Evaluate Model: Use the recall, precision

    Make predictions: Identify the customers who may cancel his subscriptions.
