

# SPPU-BE-COMP-CONTENT - KSKA Git

ml

classmate

Date :

Page :

## ASSIGNMENT-1

Q1

Applications of linear Regression:

- Price predictions: estimate rates, house prices, salaries etc.
- Sales & demand forecasting: Predict future sales or product demand.
- Trend Analysis: Understand how variables change over time (eg. revenue vs time)
- Risk & Credit Scoring: Predict likelihood of loan default or risk levels.
- Scientific / engineering uses: sensor calibration, physical experiments, relationship modelling.

Q2

- `train_test_split()` : Splits dataset into training & testing sets.
- `StandardScaler()` : standardizes features so no single variable dominates.
- `LinearRegression().fit(X_train, y_train)` : Train the regression model.
- `LinearRegression().predict(X_test)` : Predicts target values for test data.
- `mean_squared_error()` → measures average squared error (lower is better)
- `r2_score()` : Shows how much variance in target is explained (closer to 1 is better)

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Q3

Random Forest Working:

- Creates many decision trees using random subsets of data (bagging)
- At each split, considers only a random set of features reduces correlation b/w trees.
- Predictions are averaged (for regression) or voted (for classification)

Advantages:

- High accuracy with minimal tuning.
- Less prone to overfitting than single decision trees.
- Can capture non-linear relationships automatically.
- Works well with large datasets & mixed data types.
- Provides feature importance & interpretability.