LOAN APPROVAL CLASSIFICATION (SVM)

OBJECTIVE:

Implement the Support Vector Machine (SVM) algorithm to classify whether a loan application will be approved or not based on attributes such as applicant's income, credit score, loan amount, and employment length.

DATASET DESCRIPTION:

You are provided with a dataset containing information on applicant's income (in INR lakhs), credit score (out of 850), loan amount (in INR lakhs), employment length (in years), and whether the loan was approved (1 for approved, 0 for not approved).

Income (in lakhs)	Credit Score (out of 850)	Loan Amount (in lakhs)	Employment length (in years)	Approved
15	750	5	10	1
12	680	4	8	0
20	800	6	12	1
10	600	3	5	0
18	770	5	10	1
11	650	4	6	0
22	820	7	15	1
13	700	5	8	0
19	780	6	10	1
14	710	4	7	0

TASK:

1. Pre-process the dataset if necessary (e.g., handling missing values, encoding categorical variables).
2. Implement the SVM algorithm for binary classification. Use an appropriate SVM kernel (e.g., linear, polynomial, or RBF) and tune parameters such as gamma (kernel coefficient).
3. Train the SVM model using the provided dataset.
4. Predict whether a loan application will be approved for a new applicant with the following attributes:
    - Income: ₹16 lakhs
    - Credit Score: 760
    - Loan Amount: ₹5 lakhs
    - Employment Length: 9 years
5. Evaluate the performance of the model using metrics such as accuracy on the training dataset.

EMPLOYEE SALARY PREDICTION (POLYNOMIAL REGRESSION)

OBJECTIVE:

Implement the Polynomial Regression algorithm to predict the salary of an employee based on attributes such as years of experience, education level, and performance score.

DATASET DESCRIPTION:

You are provided with a dataset containing information on years of experience, education level (score out of 10), performance score (score out of 10), and the salary (in INR lakhs).

Years of Experience	Education Level (out of 10)	Performance Score (out of 10)	Salary (in lakhs)
5	7	8	8
3	6	7	6
10	9	9	15
2	5	6	5
7	8	8	10
4	6	7	7
12	9	9	18
6	7	8	9
8	8	9	12
1	5	6	4

TASK:

1. Pre-process the dataset if necessary (e.g., handling missing values, encoding categorical variables).
2. Implement the Polynomial Regression algorithm for predicting employee salaries. Choose an appropriate degree for the polynomial.
3. Train the Polynomial Regression model using the provided dataset.
4. Predict the salary for a new employee with the following attributes:
    - Years of Experience: 6
    - Education Level: 8
    - Performance Score: 8
5. Evaluate the performance of the model using metrics such as Mean Squared Error on the training dataset.