Q.1) Linear Regression: Using the dataset above, build a linear regression model to predict the salary based on the years of experience. What is the predicted salary for an employee with 3.5 years of experience?

Year of Experience	Salary(in $1000)
1	35
2	40
3	45
4	50
5	55
6	60

Q.2) Logistic Regression: Using the above dataset, build a logistic regression model to predict the probability that a student will pass the exam based on the number of hours studied. What is the predicted probability of passing if a student studies for 3.5 hours?

Hours Studied	Pass Exam(1=yes. 0=no)
1	0
2	0
3	0
4	1
5	1
6	1

Q.3) Naïve Bayes: Using this data, apply the Naive Bayes classifier to predict whether a tennis game will be played ("Yes") or not ("No") given the weather is "Sunny" and the temperature is "Cool".

Weather	Temperature	Play Tennis (1=yes. 0=no)
Sunny	Hot	0
Sunny	Hot	0
Overcast	Hot	1
Rainy	Mild	1
Rainy	Cool	1
Rainy	Mild	0
Overcast	Cool	1
Sunny	Mild	0
Sunny	Cool	1
Rainy	Mild	1

Q.4) Knn : Using the dataset above, predict the flower type of a flower with a petal length of 4.6 cm using the k-NN algorithm with k=3. Which class will it most likely belong to?

Petal Length (cm)	Flower Type
1.4	Setosa
1.3	Setosa
4.7	Versicolor
4.5	Versicolor
5.1	Virginica
5.9	Virginica

Q.5) Apriori Algorithm: Using the dataset above, apply the Apriori algorithm to find frequent itemsets with a minimum support of 60% (i.e., appearing in at least 3 transactions). Based on the frequent itemsets, suggest association rules that can help in market basket analysis.

Transaction ID	**Items Purchased**
1	Bread, Milk
2	Bread, Diaper, Juice, Eggs
3	Milk, Diaper, Juice, Cola
4	Bread, Milk, Diaper, Juice
5	Bread, Milk, Diaper, Cola

Q.6) K means Clustering: Using the dataset above, apply the K-Means clustering algorithm to group the points into 2 clusters (k=2). Identify the cluster centroids and assign each point to a cluster.

Point ID	**X**	**Y**
1	1	2
2	1	4
3	3	2
4	5	8
5	6	8
6	6	9