

## CMPE343 PROGRAMMING ASSIGNMENT

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```
1 install.packages("ggplot2")
2 install.packages("broom")
3
4 # Load required library
5 library(ggplot2)
6 library(broom)
7
8 # Read the data from the file
9 data <- read.table("C:/Users/BATIKAN YILMAZ/Documents/Question_1.txt",dec = ",")
10
11 # Assign column names if needed
12 colnames(data) <- c("x1", "x2", "Y")
13
14 # Assuming Y is binary (0 or 1)
15 # Recode Y to be binary if necessary
16 data$Y_binary <- ifelse(data$Y > mean(data$Y), 1, 0)
17
18 # Perform logistic regression
19 logistic_model <- glm(Y_binary ~ x1 + x2, data = data, family = "binomial")
20
21 # Display the summary of the logistic regression
22 summary(logistic_model)
23
24 # Plot the logistic regression curve
25 ggplot(data, aes(x = x1, y = Y_binary)) +
26   geom_point() +
27   geom_smooth(method = "glm", method.args = list(family = "binomial"), se = FALSE, color = "blue") +
28   labs(title = "Logistic Regression", x = "x1", y = "Probability of Y_binary being 1")
29
```

Call:

```
glm(formula = Y_binary ~ x1 + x2, family = "binomial", data = data)
```

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	-13.2779	4.4845	-2.961	0.00307	**
x1	-0.2001	0.2035	-0.983	0.32556	
x2	0.7406	0.2445	3.029	0.00246	**

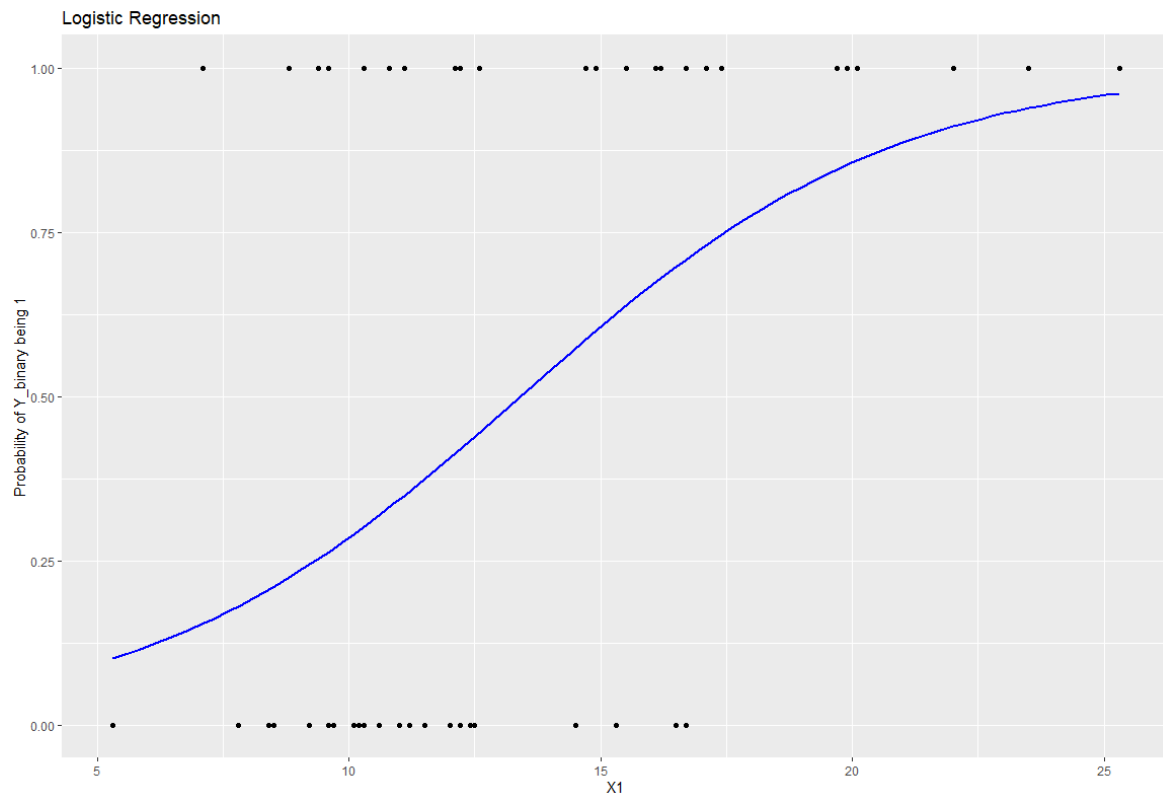
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signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 70.524 on 50 degrees of freedom  
Residual deviance: 22.766 on 48 degrees of freedom  
AIC: 28.766

Number of Fisher Scoring iterations: 7



Assuming Y is continuous, it is recoded into a binary variable (Y\_binary) based on whether the value is above or below the mean.

A logistic regression model is fitted using the `glm()` function with Y\_binary as the binary outcome and X1 and X2 as predictor variables.

The `summary()` function provides detailed information about the logistic regression model, including coefficients, standard errors, z-values, and p-values.

A logistic regression curve is plotted using `ggplot2`, visualizing the probability of Y\_binary being 1 based on the predictor variable X1.