Experiment 3.2

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Aim: Study of Regression Analysis using R Programming.

Objective: Linear Regression: It is a commonly used type of predictive analysis. It is a statistical approach for modelling the relationship between a dependent variable and a given set of independent variables.

There are two types of linear regression.

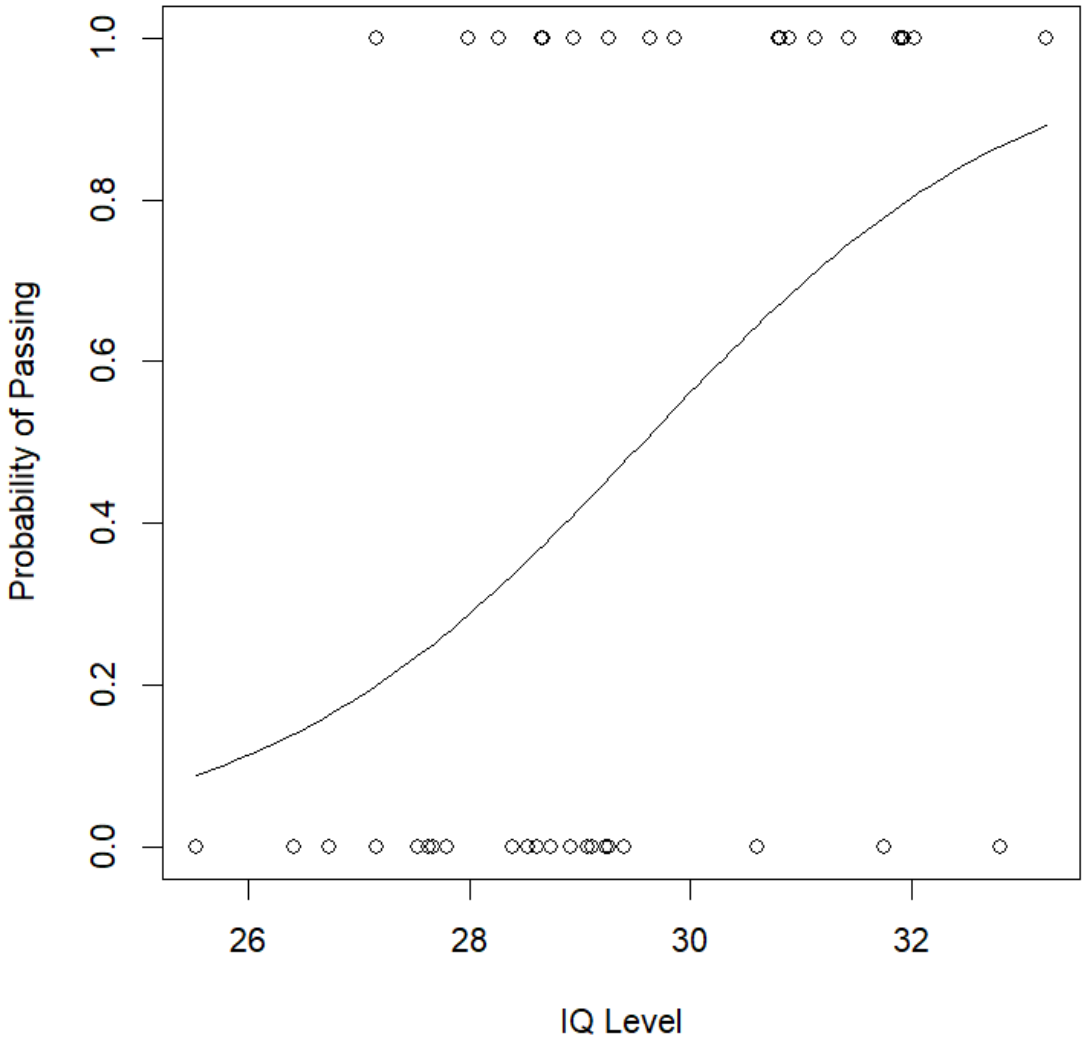
- Simple Linear Regression
- Multiple Linear Regression

Script and Output:

```
# Generate random IQ values with mean = 30 and sd =2

IQ <- rnorm(40, 30, 2)

# Sorting IQ level in ascending order

IQ <- sort(IQ)

IQ

# Generate vector with pass and fail values of 40 students

result <- c(0, 0, 0, 1, 0, 0, 0, 0, 0, 1,

            1, 0, 0, 0, 1, 1, 0, 0, 1, 0,

            0, 0, 1, 0, 0, 1, 1, 0, 1, 1,

            1, 1, 1, 0, 1, 1, 1, 1, 0, 1)
```

```
# Data Frame
df <- as.data.frame(cbind(IQ, result))

# Print data frame
print(df)

# Plotting IQ on x-axis and result on y-axis
plot(IQ, result, xlab = "IQ Level",ylab = "Probability of Passing")
#Linear regression
lrm <- lm(result ~ IQ)
summary(lrm)
#find the result of a person with IQ 35
a<-data.frame(IQ=35)
predRes<-predict(lrm,a)
print(predRes)
# Create a logistic model
lgm = glm(result~IQ, family=binomial, df)
# Summary of the regression model
summary(lgm)
# Create a curve based on prediction using the regression model
curve(predict(lgm, data.frame(IQ=x), type="resp"), add=TRUE)
```

OUTPUT:



Learning Outcome:

1. Learnt about Regression Analysis using R Programming.
2. Learnt about Simple Linear Regression.
3. Learnt about Multiple Linear Regression.