

Practical No.9

Perform the Linear regression on the given data warehouse data.

Regression

- In statistical modeling, regression analysis is a set of statistical processes for estimating the relationships between a dependent variable and one or more independent variables

Linear Regression

- In Linear Regression these two variables are related through an equation, where exponent (power) of both these variables is 1.
- $y = ax + b$ is an equation for linear regression.
- Where, y is the response variable, x is the predictor variable and a and b are constants which are called the coefficients.

lm() Function

- In R, the `lm()`, or “linear model,” function can be used to create a simple regression model. The `lm()` function accepts a number of arguments (“Fitting Linear Models,” n.d.).

```
x <- c(151, 174, 138, 186, 128, 136, 179, 163, 152, 131)
```

```
.
```

```
y <- c(63, 81, 56, 91, 47, 57, 76, 72, 62, 48)
```

```
# Apply the lm() function.
```

```
relation <- lm(y~x)
```

```
# Find weight of a person with height 170.
```

```
a <- data.frame(x = 170)
```

```
result <- predict(relation,a)
```

```
print(result)
```

```
# Give the chart file a name.
```

```
png(file = "linearregression.png")
```

```
# Plot the chart.
```

```
plot(y,x,col = "blue",main = "Height & Weight Regression",
```

```
abline(lm(x~y)),cex = 1.3,pch = 16,xlab = "Weight in Kg",ylab = "Height in cm")
```

```
# Save the file.
```

```
dev.off()
```

Height & Weight Regression