Practical One

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Air quality data set

Remove missing values

```
data <- na.omit(airquality)
```

Temperature statistics

```
temp_df <- data.frame(Statistics = c("Mean", "Standard Deviation", "Minimum", "Maximum"),
              Values = c(mean(data$Temp), sd(data$Temp), min(data$Temp), max(data$Temp)))
knitr::kable(temp_df)
```

Statistics	Values
Mean	77.792793
Standard Deviation	9.529969
Minimum	57.000000
Maximum	97.000000

Ozone level statistics

```
ozone_df <- data.frame(Statistics = c("Mean", "Standard Deviation", "Minimum", "Maximum"),
                Values = c(mean(data$Ozone), sd(data$Ozone), min(data$Ozone), max(data$Ozone)))
knitr::kable(ozone_df)
```

Statistics	Values
Mean	42.09910
Standard Deviation	33.27597
Minimum	1.00000
Maximum	168.00000

Cars data set

Remove missing values

```
cars <- na.omit (cars)
```

Declare variables

```
X <- cbind(1, cars$speed)
Y <- cars$dist
```

Calculate beta estimates

```
beta_coefficients <- solve (t(X) %*% X) %*% t(X) %*% Y
knitr::kable (beta_coefficients)
```

-17.579095
3.932409

Fit a linear model

```
model <- lm (dist ~ speed, data = cars)
```

Display the summary

```
summary_table <- as.data.frame(summary(model)$coefficients)
knitr::kable(summary_table, caption = "Model Coefficients")
```

Table 4: Model Coefficients

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	-17.579095	6.7584402	-2.601058	0.0123188
speed	3.932409	0.4155128	9.463990	0.0000000