

Statistical Computing - Practical One

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Practical One of Statistical Computing .This practical consists of 4 questions .

2 Question One

2.0.1 Finding all row numbers of “airquality” with missing values

```
rowsNA <-which((is.na(airquality)))
```

```
[1] 5 10 25 26 27 32 33 34 35 36 37 39 42 43 45 46 52 53 54  
[20] 55 56 57 58 59 60 61 65 72 75 83 84 102 103 107 115 119 150 158  
[39] 159 164 180 249 250 251
```

3 Question Two

3.0.1 Mean of temperature

```
tempmean <- mean(airquality$Temp,na.rm=TRUE)
```

```
[1] 77.88235
```

3.0.2 Standard deviation of temperature

```
tempsd <- sd(airquality$Temp,na.rm=TRUE)
```

```
[1] 9.46527
```

3.0.3 Minimum of temperature

```
tempmin <- min(airquality$Temp,na.rm=TRUE)
```

```
[1] 56
```

3.0.4 Maximum of temperature

```
tempmax <- max(airquality$Temp,na.rm=TRUE)
```

```
[1] 97
```

3.0.5 Mean of Ozone

```
ozonemean <- mean(airquality$Ozone,na.rm=TRUE)
```

```
[1] 42.12931
```

3.0.6 Standard deviation of Ozone

```
ozonesd <- sd(airquality$Ozone,na.rm=TRUE)
```

```
[1] 32.98788
```

3.0.7 Minimum of Ozone

```
ozonemin <- min(airquality$Ozone,na.rm=TRUE)
```

```
[1] 1
```

3.0.8 Maximum of Ozone

```
ozonemax <- max(airquality$Ozone,na.rm=TRUE)
```

```
[1] 168
```

4 Question Three

4.0.1 Parameter estimates using matrix calculations

```
beta <- solve(t(xmatrix)%*%xmatrix)%*%t(xmatrix)%*%ymatrix
```

```
      [,1]  
[1,] -17.579095  
[2,]  3.932409
```

5 Question Four

5.0.1 Fitting a linear model using lm()

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

Call:

```
lm(formula = dist ~ speed, data = cars)
```

Residuals:

Min	1Q	Median	3Q	Max
-29.069	-9.525	-2.272	9.215	43.201

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-17.5791	6.7584	-2.601	0.0123 *
speed	3.9324	0.4155	9.464	1.49e-12 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 15.38 on 48 degrees of freedom

Multiple R-squared: 0.6511, Adjusted R-squared: 0.6438

F-statistic: 89.57 on 1 and 48 DF, p-value: 1.49e-12