MVA_HW_1

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```
library(readr)
```

```
## Warning: package 'readr' was built under R version 4.2.2
```

```
Bumpus_sparrows <- read_csv("C:/Users/aveda/Downloads/Bumpus_sparrows.csv")
```

```
## Rows: 49 Columns: 6
## ── Column specification ────────────────────────────────────────────────────────
## Delimiter: ","
## chr (1): Survivorship
## dbl (5): Total_length, Alar_extent, L_beak_head, L_humerous, L_keel_sternum
##
## ℹ Use `spec()` to retrieve the full column specification for this data.
## ℹ Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
sparr <- Bumpus_sparrows

sparr
```

```
## # A tibble: 49 × 6
##    Survivorship Total_length Alar_extent L_beak_head L_humerous L_keel_sternum
##    <chr>               <dbl>       <dbl>       <dbl>      <dbl>          <dbl>
##  1 S                     156         245        31.6       18.5           20.5
##  2 S                     154         240        30.4       17.9           19.6
##  3 S                     153         240        31         18.4           20.6
##  4 S                     153         236        30.9       17.7           20.2
##  5 S                     155         243        31.5       18.6           20.3
##  6 S                     163         247        32         19             20.9
##  7 S                     157         238        30.9       18.4           20.2
##  8 S                     155         239        32.8       18.6           21.2
##  9 S                     164         248        32.7       19.1           21.1
## 10 S                     158         238        31         18.8           22
## # … with 39 more rows
```

```
sparr <- as.data.frame(sparr)

# This is the data regarding the sparrows that survived and not survived.


#Column Means
colMeans(subset(sparr, Survivorship == "NS")[,c("Total_length","Alar_extent","L_beak_head","L
_humerous","L_keel_sternum")])
```

```
##   Total_length    Alar_extent    L_beak_head     L_humerous L_keel_sternum
##      158.42857      241.57143       31.47857       18.44643       20.83929
```

```
#This is the total length, Alar_extent , L_beak_head, L_humerous and L_keel_sternum for the n
ot survived sparrows

colMeans(subset(sparr, Survivorship == "S")[,c("Total_length","Alar_extent","L_beak_head","L_
humerous","L_keel_sternum")])
```

```
##   Total_length    Alar_extent    L_beak_head     L_humerous L_keel_sternum
##      157.38095      241.00000       31.43333       18.50000       20.80952
```

```
#This is the total length, Alar_extent , L_beak_head, L_humerous and L_keel_sternum for the s
urvived sparrows

#Correlation
cor(subset(sparr, Survivorship == "NS")[,c("Total_length","Alar_extent","L_beak_head","L_hume
rous","L_keel_sternum")])
```

```
##                Total_length Alar_extent L_beak_head L_humerous L_keel_sternum
## Total_length      1.0000000   0.7761963   0.6769768  0.6824212      0.6568714
## Alar_extent       0.7761963   1.0000000   0.6978185  0.7845546      0.6200093
## L_beak_head       0.6769768   0.6978185   1.0000000  0.8347046      0.5698878
## L_humerous        0.6824212   0.7845546   0.8347046  1.0000000      0.6677936
## L_keel_sternum    0.6568714   0.6200093   0.5698878  0.6677936      1.0000000
```

```
#Have created the correlation for the sparrows which have not survived. Here for each variabl
e to each other it has a value of 1 which is dependent to each other and it has a lowest valu
e between L_keel_sternum and L_beak_head of 0.5698

cor(subset(sparr, Survivorship == "S")[,c("Total_length","Alar_extent","L_beak_head","L_humer
ous","L_keel_sternum")])
```

```
##                Total_length Alar_extent L_beak_head L_humerous L_keel_sternum
## Total_length      1.0000000   0.6544674   0.6425068  0.6239195      0.5103557
## Alar_extent       0.6544674   1.0000000   0.6263698  0.7464418      0.2774378
## L_beak_head       0.6425068   0.6263698   1.0000000  0.6180476      0.4336368
## L_humerous        0.6239195   0.7464418   0.6180476  1.0000000      0.4165447
## L_keel_sternum    0.5103557   0.2774378   0.4336368  0.4165447      1.0000000
```

```
#Have created the correlation for the sparrows which have survived.Here for each variable to
 each other it has a value of 1 which is dependent to each other and it has a lowest value be
tween L_keel_sternum and Alar_Extent of 0.2774


#Covariance
cov(subset(sparr, Survivorship == "NS")[,c("Total_length","Alar_extent","L_beak_head","L_hume
rous","L_keel_sternum")])
```

```
##                Total_length Alar_extent L_beak_head L_humerous L_keel_sternum
## Total_length      15.068783   17.190476   2.2428571  1.7460317      2.9306878
## Alar_extent       17.190476   32.550265   3.3978836  2.9502646      4.0656085
## L_beak_head        2.242857    3.397884   0.7284127  0.4695503      0.5590212
## L_humerous         1.746032    2.950265   0.4695503  0.4344312      0.5058862
## L_keel_sternum     2.930688    4.065608   0.5590212  0.5058862      1.3209921
```

#Have created the covariance for the sparrows which have not survived.Here the highest values is between Alar_extent itself of 32.55 and it has a lowest value between L_humerous itself of 0.4344

```
cov(subset(sparr, Survivorship == "S")[,c("Total_length","Alar_extent","L_beak_head","L_humerous","L_keel_sternum")])
```

```
##                Total_length Alar_extent L_beak_head L_humerous L_keel_sternum
## Total_length      11.047619        9.10   1.5566667     0.8700      1.2861905
## Alar_extent        9.100000       17.50   1.9100000     1.3100      0.8800000
## L_beak_head        1.556667        1.91   0.5313333     0.1890      0.2396667
## L_humerous         0.870000        1.31   0.1890000     0.1760      0.1325000
## L_keel_sternum     1.286190        0.88   0.2396667     0.1325      0.5749048
```

#Have created the covariance for the sparrows which have survived.Here the highest values is between Total_length itself of 11.04 and it has a lowest value between L_humerous and L_keel_sternum of 0.1325