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STATS419
Instructor: Dr. Shaffer
2021 February 02

R-intro

HandShake Function

The funtionI created akes in an interger representing the number of people shaking hands, and it determines the number of handshakes that occur. It has an option to plot the results as a network graph, as demonstrated below.

```
library(igraph)
handShake(n=5,plotMe = TRUE)
```

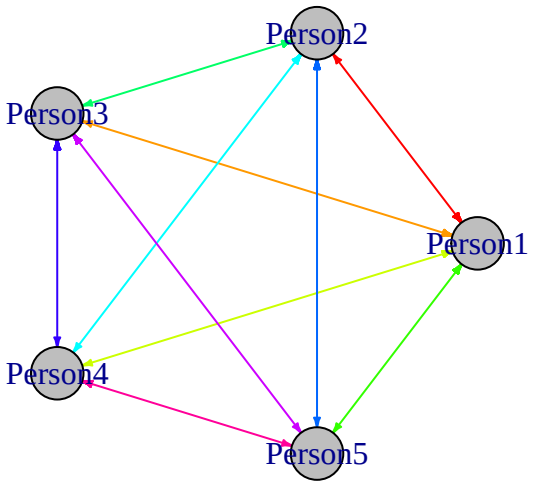

Figure 1: Network Graph Depicting the Handshakes Between 5 People

```
## [1] "The number of handshakes between 5 people is 10"
```

With 5 people shaking hands, there is a total of 10 handshakes that can occur. Each handshake is represented in the network graph, showing each person and their respective handshakes. There are arrows on both ends of each line connecting each person as they shook each others hands.

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Counting Letters From Declaration of Independence Draft and Final Version

The function created for this task takes in the file name of the Declaration of Independence version, and counts the number of letters used in the version being passed. The results are shown below as a table and as a bar chart showing how many times each letter has been used in the file provided to the function.

```
count_letters('original.txt')
```

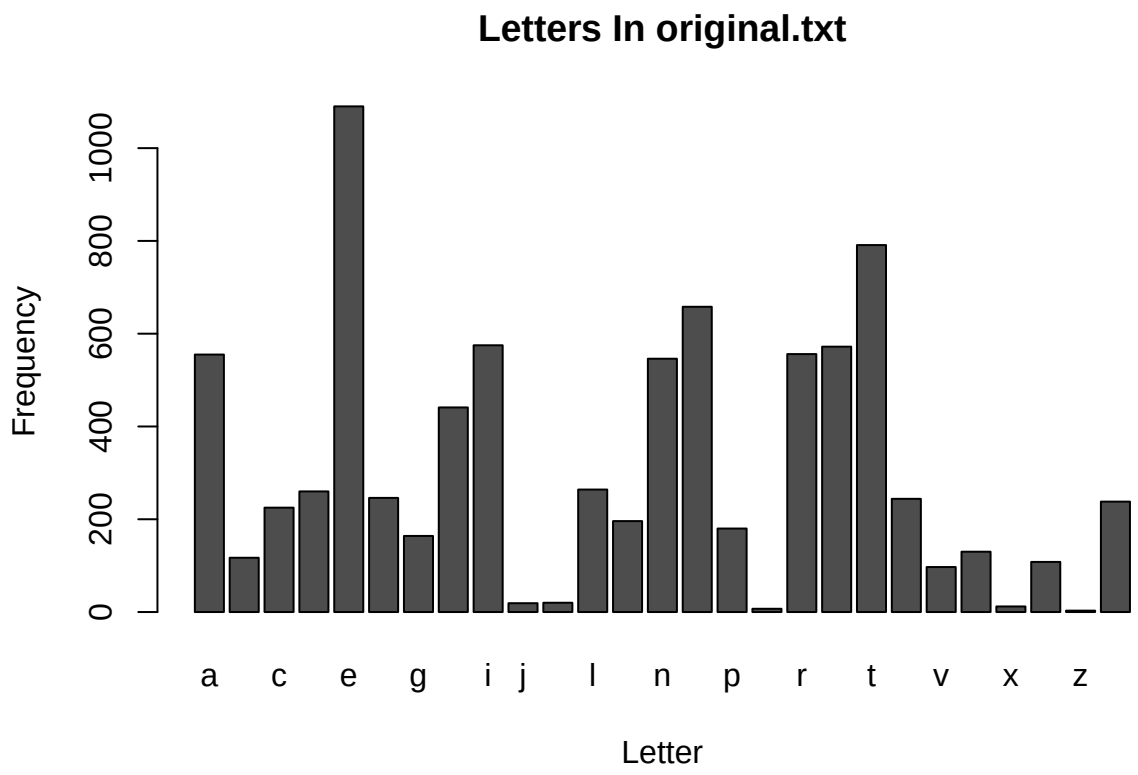

Figure 2: Count of Letters Used in original.txt

```
##     a   b   c   d    e   f   g   h   i  j  k   l   m   n   o   p q   r   s   t
## 1 555 117 225 260 1090 246 164 441 575 19 20 264 196 546 658 180 7 556 572 791
##     u   v   w   x   y z OTHER
## 1 244 97 130 12 108 3   238
```

```
count_letters('final.txt')
```

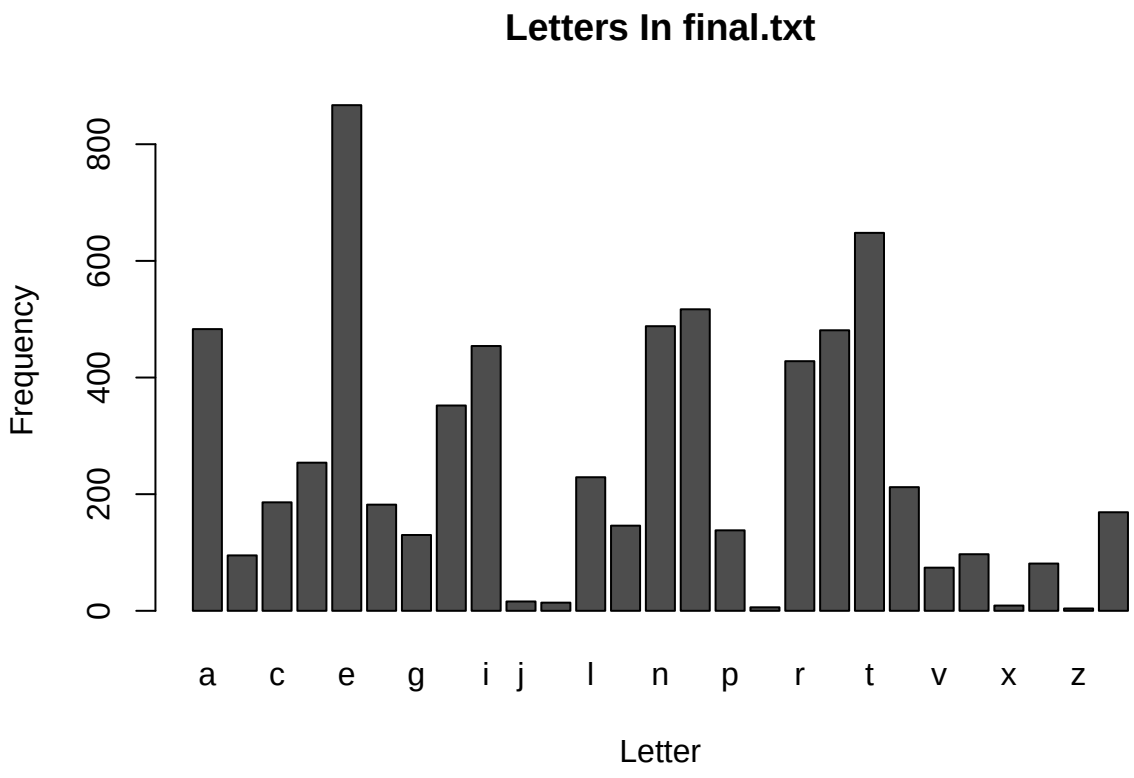

Figure 3: Count of Letters Used in final.txt

```
##     a  b   c   d   e   f   g   h   i  j  k   l   m   n   o   p q   r   s   t
## 1 483 95 186 254 867 182 130 352 454 16 14 229 146 488 517 138 6 428 481 648
##     u  v  w x  y z OTHER
## 1 212 74 97 9 81 4   169
```

Matrix Determinant

The function written to compute the determinant of a 3x3 matrix takes in a matrix and checks it is a 3x3. It will then "manually" compute the determinant (by that I mean I did not call on det()). The function is demonstrated below.

```
myMatrix = matrix(c(6,4,2,1,-2,8,1,5,7),nrow = 3, ncol = 3)
print(myMatrix)
```

```
##      [,1] [,2] [,3]
## [1,]    6    1    1
## [2,]    4   -2    5
## [3,]    2    8    7
```

```
determinant = Determinant(myMatrix)
print(determinant)
```

```
## [1] -306
```

Using this example matrix “myMatrix”, we can see the determinant is -306.