Exercise 1 - Tashfeen Ahmed - 261145667

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```
# Load the necessary libraries
library(dplyr)
```

```
## Warning: package 'dplyr' was built under R version 4.2.3
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
#install.packages("tidygraph")
#install.packages("tibble")
library(tibble)
```

```
## Warning: package 'tibble' was built under R version 4.2.3
```

```
library(tidygraph)
```

```
## Warning: package 'tidygraph' was built under R version 4.2.3
```

```
##
## Attaching package: 'tidygraph'
```

```
## The following object is masked from 'package:stats':
##
##     filter
```

```
library(igraph)
```

```
## Warning: package 'igraph' was built under R version 4.2.3
```

```
##
## Attaching package: 'igraph'
```

```
## The following object is masked from 'package:tidygraph':
##
##     groups

## The following object is masked from 'package:tibble':
##
##     as_data_frame

## The following objects are masked from 'package:dplyr':
##
##     as_data_frame, groups, union

## The following objects are masked from 'package:stats':
##
##     decompose, spectrum

## The following object is masked from 'package:base':
##
##     union
```

```
#install.packages("ggraph")
library(ggraph)
```

```
## Warning: package 'ggraph' was built under R version 4.2.3

## Loading required package: ggplot2

## Warning: package 'ggplot2' was built under R version 4.2.3
```

```
library(purrr)
```

```
## Warning: package 'purrr' was built under R version 4.2.3

##
## Attaching package: 'purrr'

## The following objects are masked from 'package:igraph':
##
##     compose, simplify
```

```
library(tidyr)
```

```
## Warning: package 'tidyr' was built under R version 4.2.3

##
## Attaching package: 'tidyr'

## The following object is masked from 'package:igraph':
##
##     crossing
```

```r
library(stringr)
```

```
## Warning: package 'stringr' was built under R version 4.2.3
```

```r
library(readr)
```

```
## Warning: package 'readr' was built under R version 4.2.3
```

```r
library(ggrepel)
```

```
## Warning: package 'ggrepel' was built under R version 4.2.3
```

```r
Connections <- read_csv("D:\\Google Drive\\McGill\\Winter Semester\\W2\\Talent-Analytics-Assignments\\Pa
```

```
## Rows: 387 Columns: 7
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (7): First Name, Last Name, URL, Email Address, Company, Position, Conne...
##
## 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.
```

```r
Connections <- Connections[!is.na(Connections$Company), ]
# Group by 'Company' and count the number of contacts per company
company_counts <- Connections %>%
  group_by(Company) %>%
  summarise(Count = n())

# Calculate the total count of contacts
total_count <- nrow(Connections)

# Print the count of contacts by company and the total count
print(paste("Total count of contacts:", total_count))
```

```
## [1] "Total count of contacts: 377"
```

```r
# Viewing the dataset in descending order
company_counts <- arrange(company_counts, desc(Count))
head(company_counts,10)
```

```
## # A tibble: 10 x 2
##    Company                                                        Count
##    <chr>                                                          <int>
##  1 McGill University - Desautels Faculty of Management               18
##  2 McGill University                                                 10
##  3 Orta Doğu Teknik Üniversitesi / Middle East Technical University   8
##  4 Arçelik Global                                                    7
##  5 CN                                                                5
##  6 Environics Analytics                                              5
```

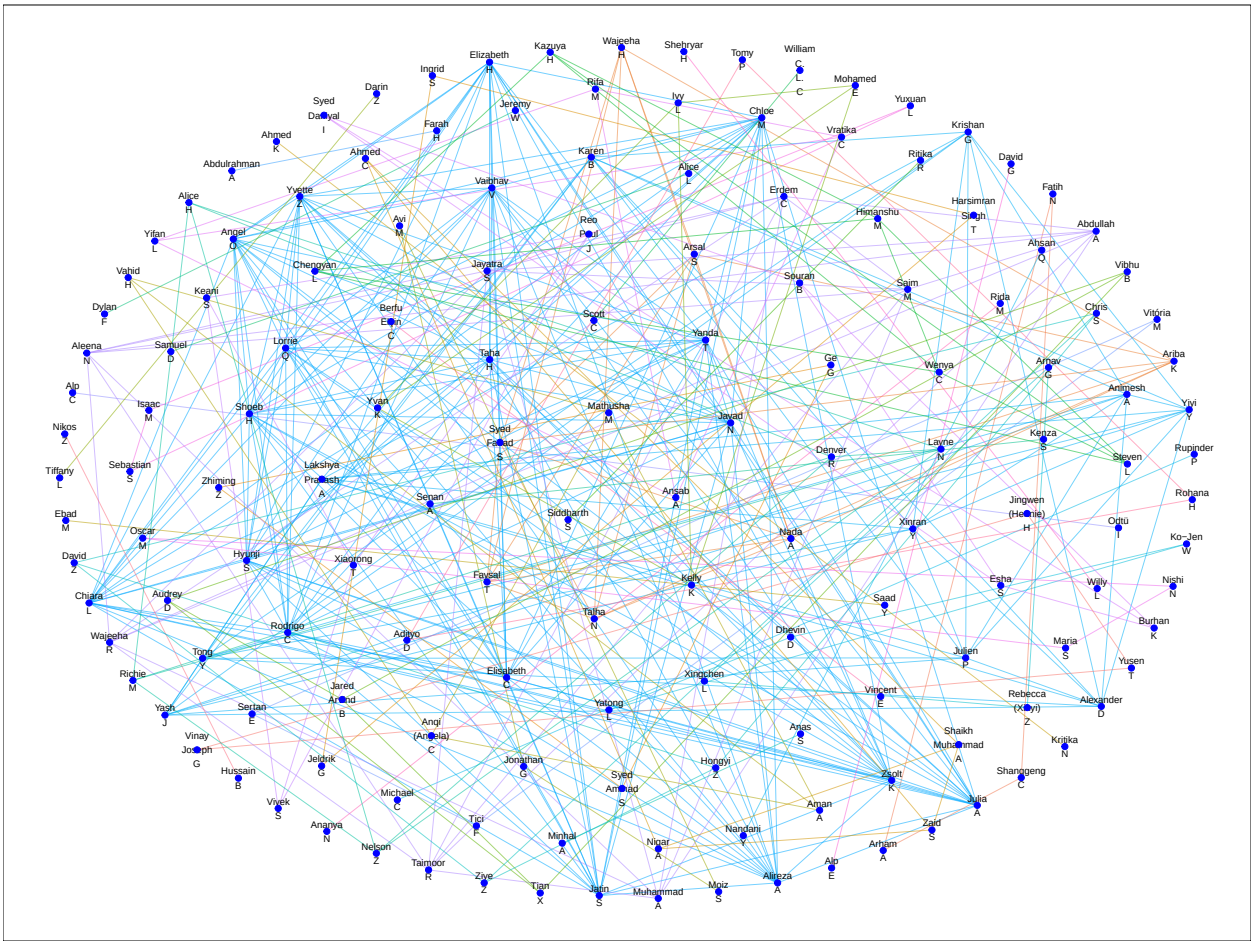
```
##  7 BRP                                                                4
##  8 Baykar Technologies                                                4
##  9 Bell                                                               4
## 10 CAE                                                                4
```

```r
# Keep only the first name and the first letter of the last name as a label for the nodes
Connections <- Connections %>%
  mutate(label = paste(`First Name`, substr(`Last Name`, 1, 1)))
Connections <- Connections %>%
  mutate(title = paste(`First Name`, substr(`Last Name`, 1, 1)))

# Create edges dataframe
edges <- Connections %>%
  select(label, Company) %>%
  distinct() %>%
  group_by(Company) %>%
  filter(n() > 1) %>%
  summarise(pair = list(combn(label, 2, simplify = FALSE))) %>%
  unnest(pair) %>%
  mutate(from = map_chr(pair, 1), to = map_chr(pair, 2)) %>%
  select(from, to, Company)  # Add Company column to the edges dataframe

# Create the graph
graph_connections <- as_tbl_graph(edges)

# Add title, label, and Company attributes to the nodes
graph_connections <- graph_connections %>%
  activate(nodes) %>%
  mutate(
    title = str_to_title(name),
    label = str_replace_all(title, " ", "\n"),
  )
```

```r
# Visualize the graph
g <- ggraph(graph_connections, layout = "kk") +
  geom_edge_link(aes(edge_alpha = 0.1, color = Company), size = 0.5) +  # Slightly thicker edges
  geom_node_text(aes(label = label), size = 4) +  # Larger text
  scale_color_brewer(palette = "Dark2") +  # Different palette
  theme_void() +
  theme(legend.position = "none", plot.background = element_rect(fill = "white")) +
  geom_node_point(color = "blue", size = 3)
```

```
## Warning in geom_edge_link(aes(edge_alpha = 0.1, color = Company), size = 0.5):
## Ignoring unknown parameters: ‘edge_size‘
```

```r
# Print the graph
print(g)
```




```
ggsave("graph_connections.png", plot = g, width = 20, height = 15, bg = "white")
```

Note: Same color edges means same Company