Exercise 1

Code

```
library("tidyverse")
library("igraph")
csv = read_csv('/Users/danystefan/Documents/01 McGill University/01 MMA/01 Summer 2022/ORGB 672/Assignm
csv
View(csv)
attach(csv)
csv %>% drop_na(Company)
```

Counting

```
count = csv %>% count(Company, sort=TRUE)
count
```

```
# A tibble: 220 × 2
   Company                                  n
   <chr>                                <int>
 1 BrainBox AI                             37
 2 McGill University - Desautels Facult…   13
 3 EY                                       6
 4 Nuance Communications                    6
 5 Manulife                                 5
 6 Air Transat                              4
 7 Autodesk                                 4
 8 Novartis                                 4
 9 Rogers Communications                    4
10 Accenture                                3
# … with 210 more rows
```

```
csv$last_initial <- substr(csv$`Last Name`, 1, 1)
csv$node_label <- paste(csv$`First Name`, csv$last_initial)
nodes <- csv %>% distinct(node_label)
View(csv)
nodes <- nodes %>% rowid_to_column('id')
nodes
copy <- csv
colnames(copy) <- paste(colnames(copy), "2", sep="_")
cross <- tidyr::crossing(csv, copy, .name_repair="minimal")
edges <- filter(cross, cross$Company == cross$Company_2 & cross$node_label != cross$node_label_2)
edges <- edges %>% select(node_label, Company, node_label_2, Company_2)
edges <- edges %>%
```

```
  left_join(nodes, by = c("node_label" = "node_label")) %>%
  rename(node_1 = id)
edges <- edges %>%
  left_join(nodes, by = c("node_label_2" = "node_label")) %>%
  rename(node_2 = id)

edges <- select(edges, node_1, node_2)
edges
```

```
# A tibble: 1,716 × 2
   node_1 node_2
    <int>  <int>
 1    115    107
 2    115     94
 3     43     23
 4    178    167
 5    178    163
 6    178    203
 7    178    165
 8    178    179
 9    178    193
10    178    198
# … with 1,706 more rows
```

Graph Network

```
library("tidygraph")
library("ggraph")
network <- tbl_graph(nodes=nodes, edges=edges, directed=FALSE)
network
```

```
# A tbl_graph: 329 nodes and 1716 edges
#
# An undirected multigraph with 217 components
#
# Node Data: 329 × 2 (active)
     id node_label
  <int> <chr>
1     1 Zhi Cheng T
2     2 Nadine H
3     3 Jack L
4     4 Ramona M
5     5 Franck B
6     6 Omer M
# … with 323 more rows
#
# Edge Data: 1,716 × 2
   from    to
  <int> <int>
1   107   115
2    94   115
3    23    43
# … with 1,713 more rows
```

```
ggraph(network) + geom_edge_link() + geom_node_point() + theme_graph()
```