ex2-ona.R

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```r
library(readr)
library(igraph)
```

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

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

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

```r
library(ggraph)
```

```
## Loading required package: ggplot2
```

```r
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.3     v stringr   1.5.0
## v forcats   1.0.0     v tibble    3.2.1
## v lubridate 1.9.3     v tidyr     1.3.0
## v purrr     1.0.2

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x lubridate::%--%()      masks igraph::%--%()
## x dplyr::as_data_frame() masks tibble::as_data_frame(), igraph::as_data_frame()
## x purrr::compose()       masks igraph::compose()
## x tidyr::crossing()      masks igraph::crossing()
## x dplyr::filter()        masks stats::filter()
## x dplyr::lag()           masks stats::lag()
## x purrr::simplify()      masks igraph::simplify()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```r
# Read data skipping first 3 lines and handle empty rows
connections <- read_csv("Connections_JessicaQuansah.csv", skip = 3)
```

```
## Rows: 660 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.
```

```
# Drop rows with empty surname and NA company
connections <- connections %>%
  drop_na(`First Name`, Company)

#Get the count of your contacts by their current employer + total count
table1<-connections %>% count(Company)
print(table1)
```

```
## # A tibble: 540 x 2
##    Company                                                   n
##    <chr>                                                 <int>
##  1 1st Armored Division                                      1
##  2 360dialog - official WhatsApp Business API Provider      1
##  3 3H ENGINEERING AND CONSTRUCTION                           1
##  4 8 80  Cities                                              1
##  5 9.0 The Underground Radio                                 1
##  6 9to5                                                      1
##  7 AHC Appliances                                            1
##  8 AJ Bell                                                   1
##  9 AJS                                                       1
## 10 AKOFENA RENTALS LIMITED                                   1
## # i 530 more rows
```

```
# Create unique identifiers for nodes
connections <- connections %>%
  mutate(id = paste(substr(`First Name`, 1, 3), substr(`Last Name`, 1, 3), row_number(), sep = ""))

# Create edges between nodes based on connections they share (same company)
edges <- connections %>%
  inner_join(connections, by = "Company") %>%
  filter(id.x != id.y) %>%
  select(from = id.x, to = id.y)
```

```
## Warning in inner_join(., connections, by = "Company"): Detected an unexpected many-to-many relationsh
## i Row 4 of ‘x‘ matches multiple rows in ‘y‘.
## i Row 16 of ‘y‘ matches multiple rows in ‘x‘.
## i If a many-to-many relationship is expected, set ‘relationship =
##   "many-to-many"‘ to silence this warning.
```

```
# Remove duplicate edges - Removes people who have no connection to anyone
edges <- unique(edges)

# Create graph
g <- graph_from_data_frame(edges, directed = FALSE)
```

```r
# Calculate the connected components of the graph
components <- clusters(g)
```

```
## Warning: `clusters()` was deprecated in igraph 2.0.0.
## i Please use `components()` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```

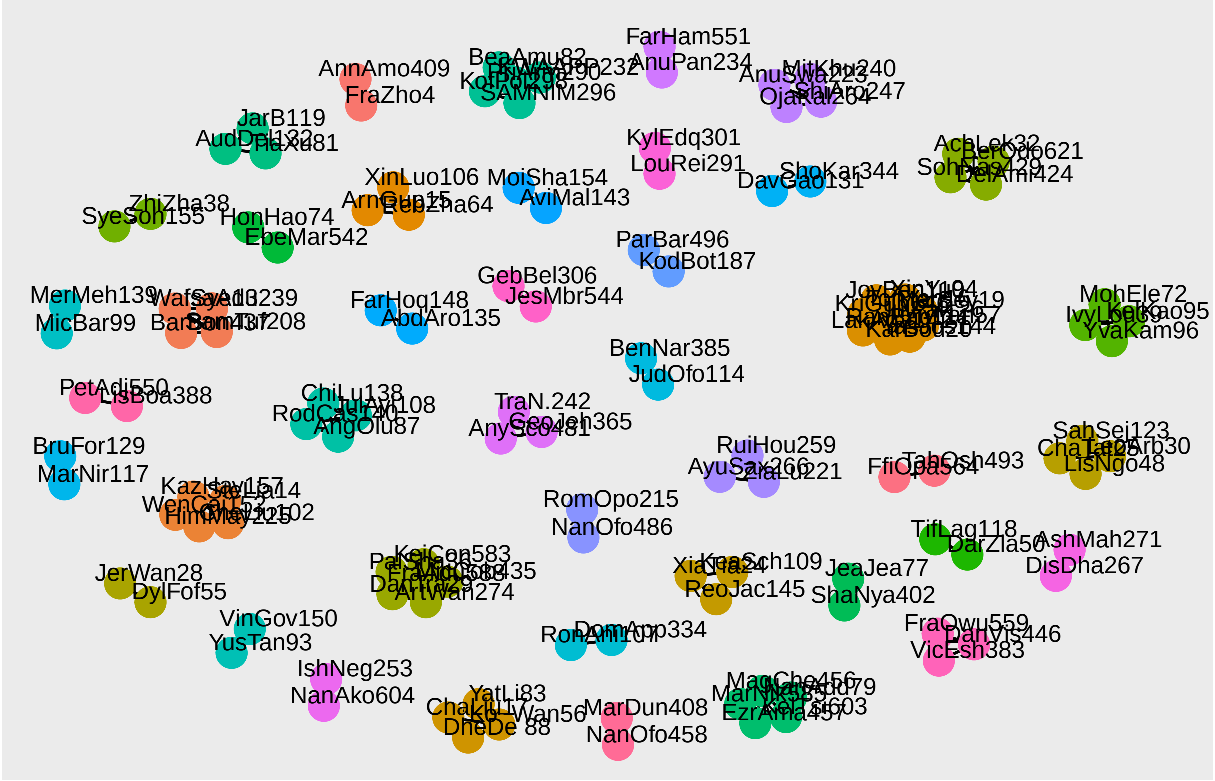
```r
# Generate unique colors for each connected component
unique_colors <- rainbow(length(components$membership))

# Create a named vector mapping each connected component to a unique color
component_colors <- setNames(unique_colors, components$membership)

# Create a color palette function to map connected components to colors
get_component_color <- function(component) {
  return(component_colors[component])
}


# Plot the graph with Fruchterman-Reingold layout
ggraph(g, layout = "fr") +
  geom_edge_link() +
  geom_node_point(aes(colour = factor(components$membership)), size = 5) +  # Use connected component f
  geom_node_text(aes(label = name), size = 3, nudge_x = 0.5, nudge_y = 0.3) +  # Adjust label position
  theme(legend.position = "none") +  # Remove legend
  labs(title = "LinkedIn Connections Network")
```

LinkedIn Connections Network



##Comments