Text analysis of A+, Network+ and Server+ Learning Objective Concepts

Reading in the Tags

```r
library(tidyverse)
library(tokenizers)
library("tm")
library("SnowballC")
library("wordcloud")
library("RColorBrewer")

setwd("~/Box/NSA Core Curriculum/Prerequisite Exams")
aplus <- readLines("./aplus.txt")
nplus <- readLines("./nplus.txt")
splus <- readLines("./splus.txt")

aplus <- Corpus(VectorSource(aplus))
nplus <- Corpus(VectorSource(nplus))
splus <- Corpus(VectorSource(splus))
```

A+

```r
aplus <- tm_map(aplus, removeWords, stopwords("english"))
aplus <- tm_map(aplus, stemDocument, language = "english")

dtm <- TermDocumentMatrix(aplus)
m <- as.matrix(dtm)
v <- sort(rowSums(m), decreasing=TRUE)
ad <- data.frame(word = names(v), freq=v)

set.seed(1234)
wordcloud(words = ad$word, freq = ad$freq, min.freq = 1,
         max.words=200, random.order=FALSE, rot.per=0.35,
         colors=brewer.pal(8, "Dark2"))
```

```
length(ad$word)
```
```
## [1] 498
```

Network+

Network tags:

![Network tags image]

```
```
nplus <- tm_map(nplus, removeWords, stopwords("english"))
nplus <- tm_map(nplus, stemDocument, language = "english")

dtm <- TermDocumentMatrix(nplus)
m <- as.matrix(dtm)
v <- sort(rowSums(m), decreasing=TRUE)
nd <- data.frame(word = names(v), freq=v)

set.seed(1234)
wordcloud(words = nd$word, freq = nd$freq, min.freq = 1,
          max.words=200, random.order=FALSE, rot.per=0.35,
          colors=brewer.pal(8, "Dark2"))

length(nd$word)

## [1] 494

Server+

splus <- tm_map(splus, removeWords, stopwords("english"))
splus <- tm_map(splus, stemDocument, language = "english")

dtm <- TermDocumentMatrix(splus)
m <- as.matrix(dtm)
v <- sort(rowSums(m), decreasing=TRUE)
sd <- data.frame(word = names(v), freq=v)

set.seed(1234)
wordcloud(words = sd$word, freq = sd$freq, min.freq = 1,
          max.words=200, random.order=FALSE, rot.per=0.35,
          colors=brewer.pal(8, "Dark2"))
A+ and Network+ Common Elements

and <- merge(ad, nd, by = "word")

set.seed(1234)
wordcloud(words = and$word, freq = and$freq.x, min.freq = 1,
max.words=200, random.order=FALSE, rot.per=0.35,
colors=brewer.pal(8, "Dark2"))

Terms in A+ but not in Network+
adonly <- ad$word %in% nd$word,

set.seed(1234)
wordcloud(words = adonly$word, freq = adonly$freq, min.freq = 1,
max.words=200, random.order=FALSE, rot.per=0.35,
colors=brewer.pal(8, "Dark2"))

length(adonly$word)
## [1] 301

Terms in Network+ but not in A+

ndonly <- nd$word %in% ad$word,

set.seed(1234)
wordcloud(words = ndonly$word, freq = ndonly$freq, min.freq = 1,
max.words=200, random.order=FALSE, rot.per=0.35,
colors=brewer.pal(8, "Dark2"))
A+ and Server+ Common Elements

```r
and <- merge(ad, sd, by = "word")

set.seed(1234)
wordcloud(words = and$word, freq = and$freq.x, min.freq = 1,
          max.words = 200, random.order = FALSE, rot.per = 0.35,
          colors = brewer.pal(8, "Dark2"))
```

Terms in A+ but not in Server+

```r
adonly <- ad[!{ad$word %in% sd$word},]

set.seed(1234)
wordcloud(words = adonly$word, freq = adonly$freq, min.freq = 1,
          max.words = 200, random.order = FALSE, rot.per = 0.35,
          colors = brewer.pal(8, "Dark2"))
```
## [1] 340

Terms in Server+ but not in A+

sdonly <- sd[!sd$word %in% ad$word],

set.seed(1234)
wordcloud(words = sdonly$word, freq = sdonly$freq, min.freq = 1,
max.words=200, random.order=FALSE, rot.per=0.35,
colors=brewer.pal(8, "Dark2"))

## [1] 108

Network+ and Server+ Common Elements
nsd <- merge(nd, sd, by = "word")

set.seed(1234)
wordcloud(words = nsd$word, freq = nsd$freq.x, min.freq = 1,
max.words=200, random.order=FALSE, rot.per=0.35,
colors=brewer.pal(8, "Dark2"))

length(nsd$word)

## [1] 163

Terms in Network+ but not in Server+
ndonly <-nd[!(nd$word %in% sd$word),]

set.seed(1234)
wordcloud(words = ndonly$word, freq = ndonly$freq, min.freq = 1,
max.words=200, random.order=FALSE, rot.per=0.35,
colors=brewer.pal(8, "Dark2"))
Terms in Server+ but not in Network+

sdonly <- sd[!(sd$word %in% nd$word),]

set.seed(1234)
wordcloud(words = sdonly$word, freq = sdonly$freq, min.freq = 1,
         max.words=200, random.order=FALSE, rot.per=0.35,
         colors=brewer.pal(8, "Dark2"))

length(sdonly$word)
## [1] 103

Terms in All three exams

all <- merge (nd, merge(ad, sd, by = "word"), by = "word")

set.seed(1234)
wordcloud(words = all$word, freq = all$freq, min.freq = 1,
         max.words=200, random.order=FALSE, rot.per=0.35,
         colors=brewer.pal(8, "Dark2"))

length(all$word)
## [1] 103
## [1] 108

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<th>freq.y</th>
<th>freq.x freq.y</th>
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hardwar  1  3  10
identifi  2  2  4
implement  8  3  5
instal  2  3  1
install  1  1  11
ipv4  1  1  1
ipv6  1  1  1
key  1  1  1
level  1  1  2
local  1  3  2
lock  1  3  1
mac  1  4  1
mainten  1  2  1
manag  14  6  6
measur  1  2  2
media  1  1  3
monitor  8  1  1
multifactor  1  1  1
nat  2  1  1
necessari  1  2  2
network  53  13  6
open  4  1  1
outcom  1  1  2
patch  2  6  1
perform  1  2  4
 physic  9  5  9
placement  5  1  1
plan  2  1  3
polici  6  17  5
port  28  4  14
potenti  1  1  2
power  4  6  2
practic  2  7  2
prevent  1  1  2
privat  3  3  1
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problem  2  3  13
procedur  3  2  1
public  3  4  1
resolv  1  1  2
router  3  1  1
safeti  2  1  1
secur  22  14  16
server  1  2  31
servic  4  2  3
size  1  1  1
software  2  3  4
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static  1  2  1
storag  1  2  8
system  6  7  2
tcp  3  1  1
technolog  1  1  1
test  5  1  2
theori  2  2  4
tool  7  13  4
troubleshoot  9  18  18
type  9  15  4
udp  1  1  1
user  3  6  1
verifi  1  1  2
video  2  5  1
virtual  1  4  1
vpn  2  1  1
wireless  25  7  1