LinkedIn Data Analysis Challenge

Tasks

- Straighten out the dataframe to a table of at least 7 columns.
- Identify the top 5 predominant ages in the dataset.
- Determine the bank with the largest share of transactions.
- Show a distribution of channels used on transactions.

In [11]:
```
#Load the libaries
library(readxl)
library(dplyr)
library(tidyr)
library(ggplot2)
library(treemapify)
library(plotrix)
```

In [12]:
```
#import data
data <- read_excel('Killa.xlsx')
```

In [13]:
```
#to view the first five rows
head(data)
```

First Name	Last Name	transaction
nooeukw	uuoaklowalb	{'tx_id': '5ed3d67b8723c11444c43283', 'tx_date': '2020-06-13T05:28:47.543000Z', 'tx_amount': 6192, 'tx_mode': 'Debit', 'tx_channel': 'web', 'bank_name': 'QBank', 'dob': ['1992-11-10 00:00:00']}
angulbo	seagn	{'tx_id': '5ed3d67b8723c11444c43283', 'tx_date': '2020-06-12T20:22:38.986000Z', 'tx_amount': 38445, 'tx_mode': 'Debit', 'tx_channel': 'mobile', 'bank_name': 'ABank', 'dob': ['n/a']}
dukowi	eukloomja	{'tx_id': '5ed3d67b8723c11444c43283', 'tx_date': '2020-06-13T06:00:46.904000Z', 'tx_amount': 29627, 'tx_mode': 'Debit', 'tx_channel': 'mobile', 'bank_name': 'GBank', 'dob': ['1992-01-01 00:00:00']}
ltuoawiob	uuilawobmn	{'tx_id': '5ed3d67b8723c11444c43283', 'tx_date': '2020-06-13T16:10:51.479000Z', 'tx_amount': 27791, 'tx_mode': 'Debit', 'tx_channel': 'web', 'bank_name': 'KBank', 'dob': ['1981-01-07 00:00:00']}
nakuolo	donald	{'tx_id': '5ed3d67b8723c11444c43283', 'tx_date': '2020-06-13T05:28:47.543000Z', 'tx_amount': 6192, 'tx_mode': 'Debit', 'tx_channel': 'web', 'bank_name': 'QBank', 'dob': ['n/a']}
juagn	ahcnaiz	{'tx_id': '5ed3d67b8723c11444c43283', 'tx_date': '2020-06-12T20:22:38.986000Z', 'tx_amount': 38445, 'tx_mode': 'Debit', 'tx_channel': 'mobile', 'bank_name': 'ABank', 'dob': ['1980-11-22 00:00:00']}

Data Wrangling

In [14]:
```
data$transaction <- gsub("\\{|\\}", '', data$transaction) #to remove the curly braces
data$transaction <- gsub("\\[|\\]", '', data$transaction) #to remove square brackets
data$transaction <- gsub("'", '', data$transaction) #to remove the parentheses
head(data)
```

First Name	Last Name	transaction
nooeukw	uuoaklowalb	tx_id: 5ed3d67b8723c11444c43283, tx_date: 2020-06-13T05:28:47.543000Z, tx_amount: 6192, tx_mode: Debit, tx_channel: web, bank_name: QBank, dob: 1992-11-10 00:00:00
angulbo	seagn	tx_id: 5ed3d67b8723c11444c43283, tx_date: 2020-06-12T20:22:38.986000Z, tx_amount: 38445, tx_mode: Debit, tx_channel: mobile, bank_name: ABank, dob: n/a
dukowi	eukloomja	tx_id: 5ed3d67b8723c11444c43283, tx_date: 2020-06-13T06:00:46.904000Z, tx_amount: 29627, tx_mode: Debit, tx_channel: mobile, bank_name: GBank, dob: 1992-01-01 00:00:00
ltuoawiob	uuilawobmn	tx_id: 5ed3d67b8723c11444c43283, tx_date: 2020-06-13T16:10:51.479000Z, tx_amount: 27791, tx_mode: Debit, tx_channel: web, bank_name: KBank, dob: 1981-01-07 00:00:00
nakuolo	donald	tx_id: 5ed3d67b8723c11444c43283, tx_date: 2020-06-13T05:28:47.543000Z, tx_amount: 6192, tx_mode: Debit, tx_channel: web, bank_name: QBank, dob: n/a
juagn	ahcnaiz	tx_id: 5ed3d67b8723c11444c43283, tx_date: 2020-06-12T20:22:38.986000Z, tx_amount: 38445, tx_mode: Debit, tx_channel: mobile, bank_name: ABank, dob: 1980-11-22 00:00:00

In [15]:
```
#to separate transaction column into multiple columns
data <- data %>% separate(transaction, c("tx_id", "tx_date", "tx_amount", "tx_
mode", "tx_channel", "bank_name", "dob"),
                         sep = "([,])")
head(data)
```

First Name	Last Name	tx_id	tx_date	tx_amount	tx_mode	tx_c
nooeukw	uuoaklowalb	tx_id: 5ed3d67b8723c11444c43283	tx_date: 2020-06-13T05:28:47.543000Z	tx_amount: 6192	tx_mode: Debit	tx_c
angulbo	seagn	tx_id: 5ed3d67b8723c11444c43283	tx_date: 2020-06-12T20:22:38.986000Z	tx_amount: 38445	tx_mode: Debit	tx_c
dukowi	eukloomja	tx_id: 5ed3d67b8723c11444c43283	tx_date: 2020-06-13T06:00:46.904000Z	tx_amount: 29627	tx_mode: Debit	tx_c
ltuoawiob	uuilawobmn	tx_id: 5ed3d67b8723c11444c43283	tx_date: 2020-06-13T16:10:51.479000Z	tx_amount: 27791	tx_mode: Debit	tx_c
nakuolo	donald	tx_id: 5ed3d67b8723c11444c43283	tx_date: 2020-06-13T05:28:47.543000Z	tx_amount: 6192	tx_mode: Debit	tx_c
juagn	ahcnaiz	tx_id: 5ed3d67b8723c11444c43283	tx_date: 2020-06-12T20:22:38.986000Z	tx_amount: 38445	tx_mode: Debit	tx_c

In [16]:
```
#to separate and extract the data needed for analysis. NA was imputed to ignor
e the first variable
data <- data %>% separate(tx_id, c(NA, "ID"), sep = "([:])", extra = "drop")
data <- data %>% separate(tx_date, c(NA, "Date"), sep = "([:])", extra = "dro
p")
data <- data %>% separate(tx_amount, c(NA, "Amount"), sep = "([:])", extra =
"drop")
data <- data %>% separate(tx_mode, c(NA, "ModeOfPayment"), sep = "([:])", extr
a = "drop")
data <- data %>% separate(tx_channel, c(NA, "Channel"), sep = "([:])", extra =
"drop")
data <- data %>% separate(bank_name, c(NA, "BankName"), sep = "([:])", extra =
"drop")
data <- data %>% separate(dob, c(NA, "YearOfBirth"), sep = "([:-])", extra =
"drop")
head(data)
```

First Name	Last Name	ID	Date	Amount	ModeOfPayment	Channel	Ba
nooeukw	uuoaklowalb	5ed3d67b8723c11444c43283	2020-06-13T05	6192	Debit	web	
angulbo	seagn	5ed3d67b8723c11444c43283	2020-06-12T20	38445	Debit	mobile	
dukowi	eukloomja	5ed3d67b8723c11444c43283	2020-06-13T06	29627	Debit	mobile	
ltuoawiob	uuilawobmn	5ed3d67b8723c11444c43283	2020-06-13T16	27791	Debit	web	
nakuolo	donald	5ed3d67b8723c11444c43283	2020-06-13T05	6192	Debit	web	
juagn	ahcnaiz	5ed3d67b8723c11444c43283	2020-06-12T20	38445	Debit	mobile	

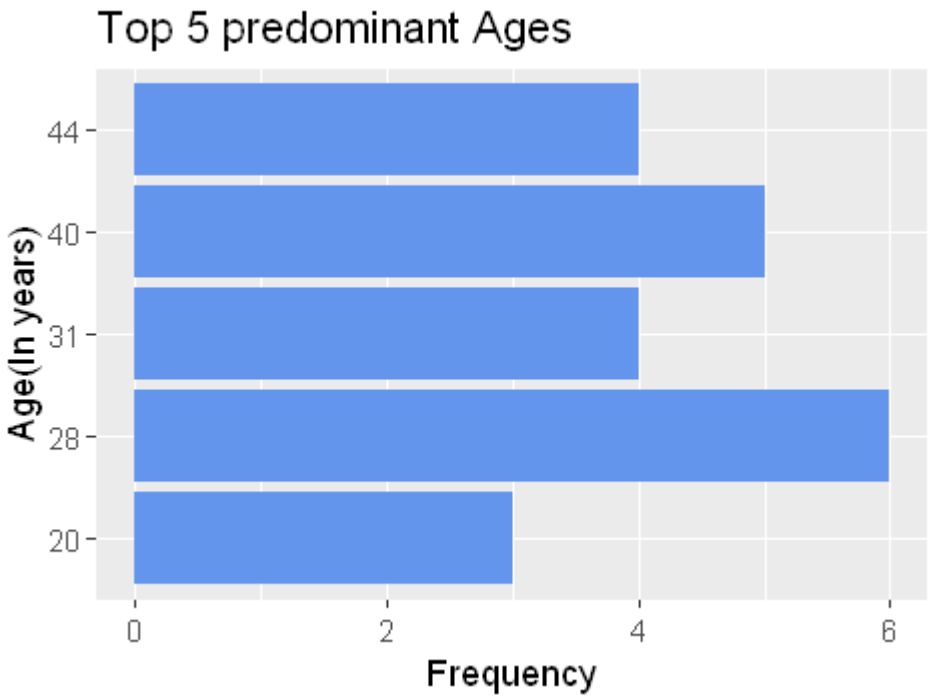
In [17]:
```
data <- transform(data, YearOfBirth = as.numeric(YearOfBirth))
data$Age <- 2020 - data$YearOfBirth #to extract the age
```

```
Warning message in eval(substitute(list(...)), `_data`, parent.frame()):
"NAs introduced by coercion"
```

To identify the top 5 predominant ages in the dataset

In [18]:
```
options(repr.plot.width=4, repr.plot.height=3) #to set the size of the chart
data <- transform(data, Age = as.factor(Age)) #to change the age to categorica
l variable
agedata <- data %>% count(Age)
agedata <- agedata %>% arrange(desc(n)) %>% slice(2:6) #I started from 2 becau
se the highest frequency is the NA value

ggplot(agedata, aes(x = Age, y=n)) + geom_bar(fill = "cornflowerblue", stat="i
dentity") + labs(x = "Age(In years)",
                                                    y = "Frequency", title =
"Top 5 predominant Ages") + coord_flip()
```

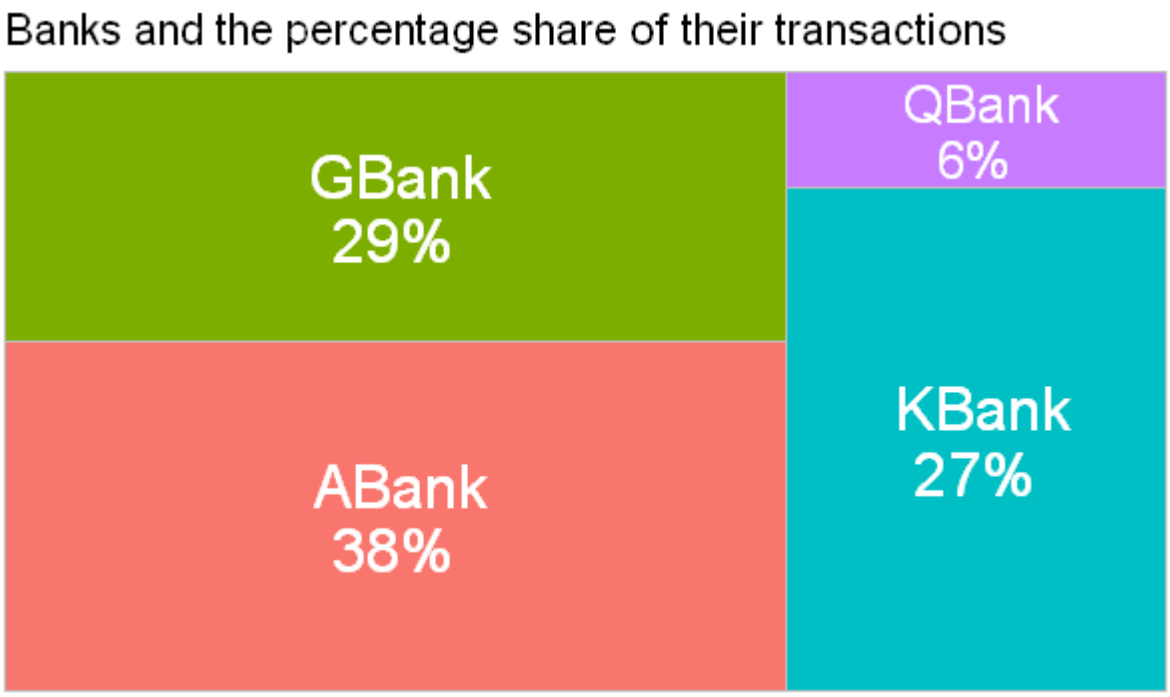


To determine the bank with the largest share of transactions.

In [19]:
```
options(repr.plot.width=5, repr.plot.height=3)
data <- transform(data, Amount = as.numeric(Amount))
bankdata <- data %>% group_by(BankName) %>% summarise(Amount = sum(Amount))
bankdata$PercAmt <- round(bankdata$Amount*100/sum(bankdata$Amount))
bankdata$label <- paste0(bankdata$BankName, "\n", round(bankdata$PercAmt), "%"
)

ggplot(bankdata, aes(fill = BankName, area = Amount, label = label)) + geom_tr
eemap() + geom_treemap_text(colour = "white",
    place = "centre") + labs(title = "Banks and the percentage share of their
 transactions") + theme(legend.position = "none")
```

```
`summarise()` ungrouping output (override with `.groups` argument)
```



ABank has the largest share of transactions

To show distribution of channels used on transactions

In [20]:
```
options(repr.plot.width=7, repr.plot.height=4)
channeldata <- data %>% count(Channel)
channeldata$PercAmt <- round(channeldata$n*100/sum(channeldata$n), 2)
channeldata$label <- paste0(channeldata$Channel, "\n", channeldata$PercAmt,
"%")

pie3D(channeldata$PercAmt,labels=channeldata$label, explode=0.1, main="Distrib
ution of channels used")
```