MiniProject2

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March 30, 2017

Description:

_To find the place most posted on a travel website from 500 posts. The main point is trying to illustrate the structure of the response and processing to a dataframe.

- note: sometimes there is no location tag, could consider searching for it in the text of the comment.

Code:

```
##Loading Libraries needed for the rest of the report:

library(jsonlite)
```

```
## Warning: package 'jsonlite' was built under R version 3.3.3
```

```
library(knitr)
library(Rfacebook)
knitr::opts_chunk$set(error=T,warning=TRUE)

rm(list = ls())
```

Gathering RawData:

```
rm(list = ls())
website_URL = "https://www.facebook.com/thousandamazingplacesonearth/"
load("My_OAuth.txt")

website_Id = "437841726243764"

##  Making the query. THe query was
##  first tested this out on the Graph API Explorer
##  Note: The limit for number of posts is capped
##  at 100 for a page of response.
##  Additional responses needs to be retrieved
##  via cursors.

query= paste("https://graph.facebook.com",website_Id,
             "?fields=posts.limit(100){place}",sep="/")

#Pulling RawData
raw_Data= callAPI(query,token)
```

Planning:

Query Response Structure:

Paging Response Structure:

Desired Organized Output Structure:

Desired Final DF:

Pesudocode For Parsing:

NOTE: This process is based on similar procedure as the source code of the Rfacebook Package. No credit is taken for the idea behind this parsing. The structure of the Rfacebook source code was studied and parts of it was adapted. The functions that was studied are the getPage function, the *pageToDF & UnlistWithNA* functions under the Utils.R package

- It is strongly recommended to use the function *UnlistWithNA* (unavailable for direct access in the Rfacebook Package) under the Utils.R package for parsing of queries not supported by the methods of the Rfacebook. *UnlistWithNa* function includes pre-made parsing function for many possible fields. Furthermore, the general structure of this function can be adapted to parse JSON formatted information.___

Parsing and Processing information.

Organizing the data into a data frame:

```
num_Posts = 500
post_Limit = 100

#   navigating to list of posts data.
query_Data = raw_Data$posts$data

#   extracting information and formatting.
#   This process is mostly done by the UnlistWithNA function.

UnlistWithNA_Copy = function(field, list)
{
    ## produce a list of NAs.
    complete = rep(NA, length(list))

    if(length(field)==1)
    {
```

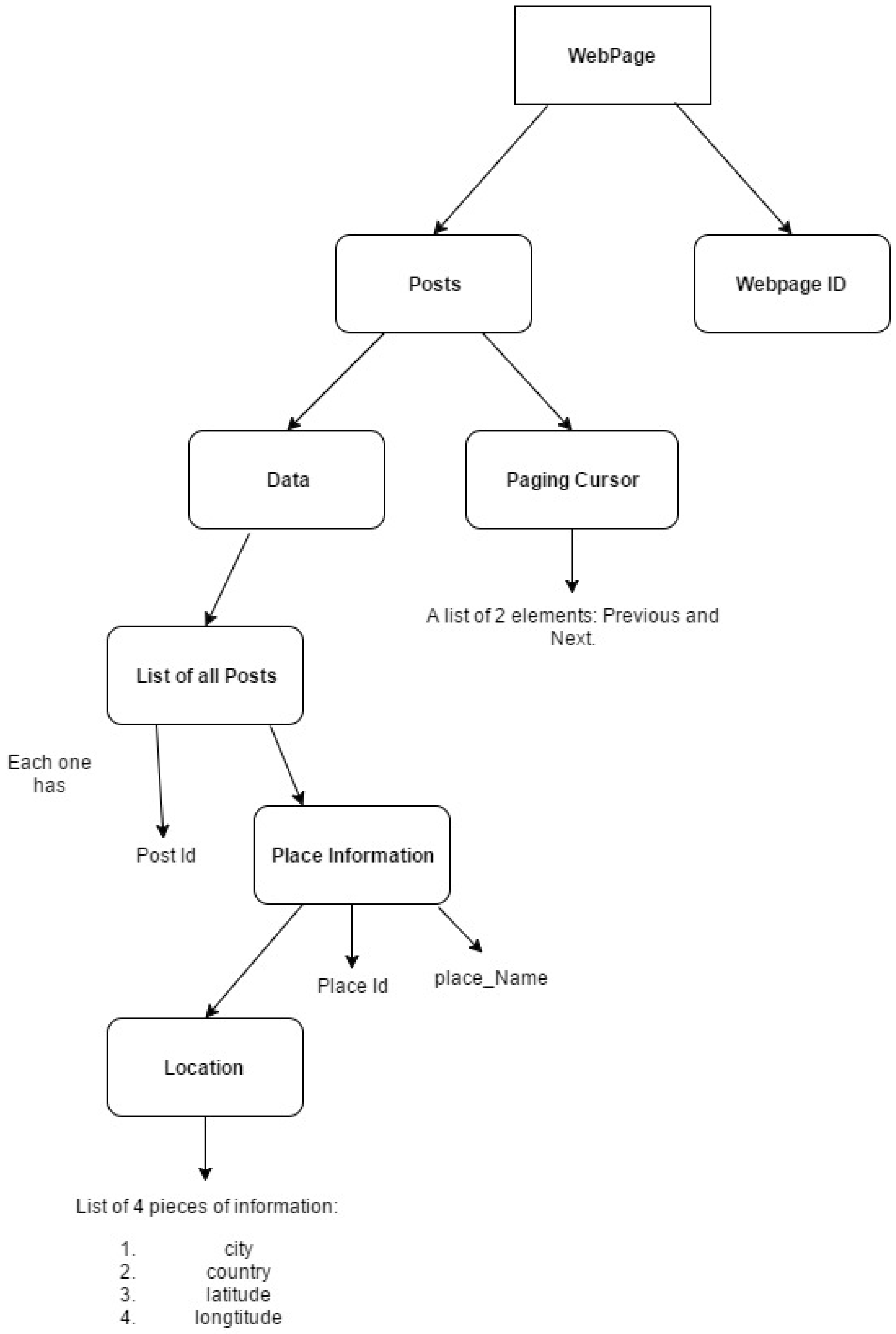

WebPage
Posts
Webpage ID
Data
Paging Cursor
A list of 2 elements: Previous and Next.
List of all Posts
Each one has
Post Id
Place Information
Place Id
place_Name
Location
List of 4 pieces of information:
1. city
2. country
3. latitude
4. longtitude

Figure 1:

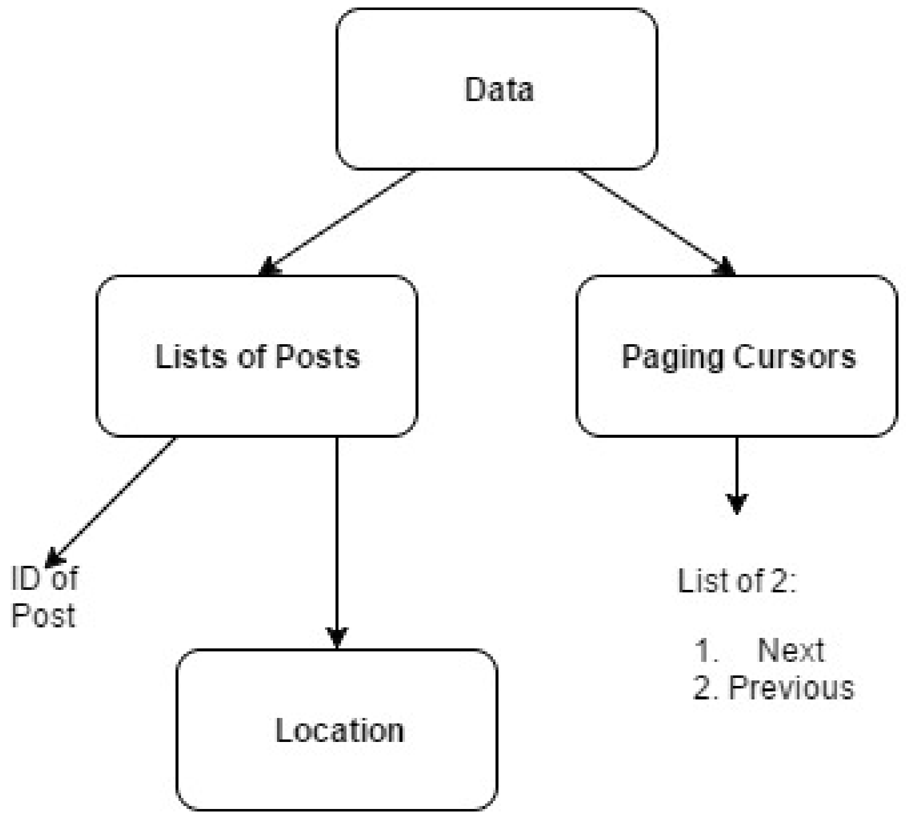

Data
Lists of Posts
Paging Cursors
ID of Post
Location
List of 2:
1. Next
2. Previous

Figure 2:

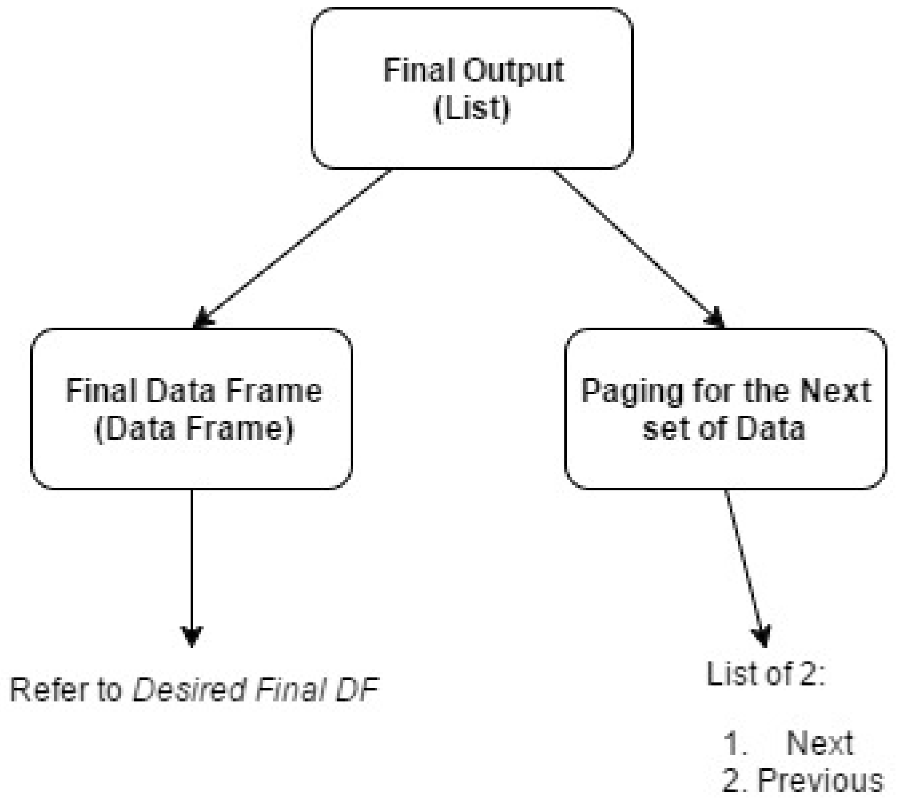
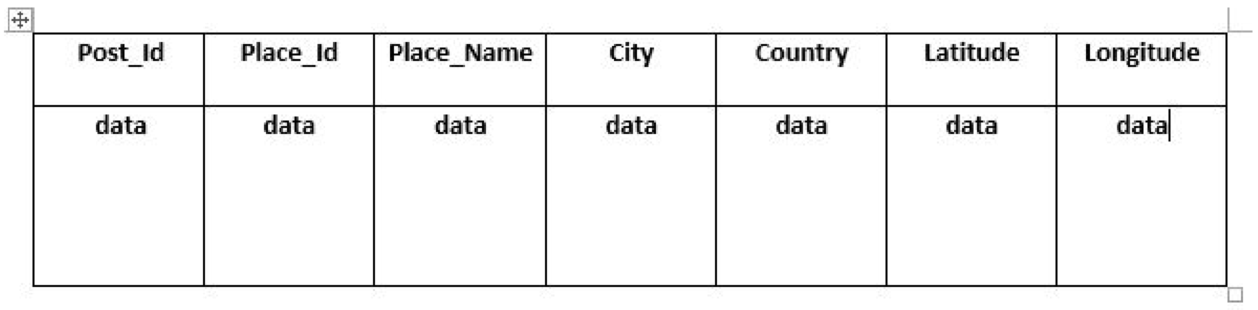


Figure 3:



Post_Id	Place_Id	Place_Name	City	Country	Latitude	Longitude
data	data	data	data	data	data	data

Figure 4:

```r
        ## produces a vector indicating which indices are not null.
        notNull = unlist(lapply(list,function(x) !is.null(x[[field]])))

        ##  Combine the information within the fields as well as
        ##  the NA_List to
        ##  form the complete and correct list.
        ##  NOTE: differences between [[]] selects the content and []
        ##  selects the corresponding container and the content

        complete[notNull]= unlist(lapply(list, function(x) x=x[[field]]))

    }

    ##  Multiple level of fields to parse through
    if(length(field)==2)
    {
        ##similar logic as the above.
        notNull=unlist(lapply(list,function(x)!
                                 is.null(x[[field[1]]][[field[2]]])))
        complete[notNull]= unlist(lapply(list,function(x)
            x=x[[field[1]]][[field[2]]]))

    }
    if (length(field)==3){
        notnull <- unlist(lapply(list, function(x)
        !is.null(x[[field[1]]][[field[2]]][[field[3]]])))

        complete[notnull] <- unlist(lapply(list[notnull],
                          function(x) x = x[[field[1]]][[field[2]]][[field[3]]] ))
    }

     ## Note: for lists, data.frame corece it as a row. While for vectors,
     ## each vector is a column. Thus in order for each field to
     ## be its own column,
     ## the list needs to be a vector
    return(as.vector(complete))

}


## Takes a list of data and extract the fields of interest
## and organize into a data frame.
OrganizingDF = function(list)
{
    # Constructing lists corresponding to the desired fields using the above
    # function.

    ##Similar Warning appeared that stated multiple of replacement length when
    ##the package is called orginally.

        post_Id=UnlistWithNA_Copy(c("id"), list)
        place_Id=UnlistWithNA_Copy(c("place","id"),list)
        place_Name=UnlistWithNA_Copy(c("place","name"),list)
```

```
          city=UnlistWithNA_Copy(c("place","location","city"),list)
          country=UnlistWithNA_Copy(c("place","location","country"),list)
          latitude=UnlistWithNA_Copy(c("place","location","latitude"),list)
          longitude=UnlistWithNA_Copy(c("place","location","longitude"),list)
          street=UnlistWithNA_Copy(c("place","location","street"),list)

      df = data.frame(post_Id, place_Id,place_Name,city,country,
                     latitude,longitude,street,stringsAsFactors = F)

      return(df)
  }
```

Manual Paging to extract more response:

```
  ## Continuing on with Data Processing:
  ## The query information is organized into a data frame.

  query_DF = OrganizingDF(query_Data)



  ##  Moving on to organizing the paging informations. This can be done in a loop.
  ##  Depending the number of posts desired, a custom function can be made
  ##  to calculate how many pages of response are required.

  ## By modifying the ".limit" modifier in the paging cursor,
  ##  you can specify the number of posts to return per page of response.
  ##  In this case, the required number of posts is 500
  ##  a loop will be made to navigaet the cursors 4 times.

  ##  The format of the paging token location varies: For the initial query,
  ##  it is under raw_Data$posts$paging[["next"]]. For any subsequent navigations,
  ##  it is under raw_Data$paging[["next"]]

  paging_Url = raw_Data$posts$paging[["next"]]
  for(i in (1:4))
  {
      #formatting paging_Url to extract 100 posts (post limit) each time
      paging_Url = gsub(pattern="place&limit=25", replacement =
                            paste("place&limit=",post_Limit,sep=""), x=paging_Url)


      # Extracting the raw_Data from the new paging_Url
      raw_Data_Paging = callAPI(paging_Url,token)

      #formatting the data using the above functions into a data frame.
      response_DF = OrganizingDF(raw_Data_Paging$data)

      #Formating final output:
      query_DF = rbind(query_DF,response_DF)

      #Navigating to next paging cursor
      paging_Url = raw_Data_Paging$paging[["next"]]
  }
```

```r
dim(query_DF)
```

```
## [1] 500   8
```

```r
# Now the matrix is organized, time to get it into the final output format.

final_Out = list(query_DF, raw_Data_Paging$paging)
```

frequency table:

```r
#finding most visited location:

location = query_DF$country
freq= table(location)
freq=sort(freq)


freq
```

```
## location
##                Argentina                   Bhutan Central African Republic
##                        1                        1                        1
##                    China                  Croatia                  Germany
##                        1                        1                        1
##                  Iceland                  Ireland                   Israel
##                        1                        1                        1
##                  Lebanon                    Nepal                     Peru
##                        1                        1                        1
##                 Portugal                    Samoa                 Thailand
##                        1                        1                        1
##                  Austria                   Brazil                    Japan
##                        2                        2                        2
##     United Arab Emirates                 Zimbabwe                Indonesia
##                        2                        2                        3
##              Netherlands                 Pakistan                Australia
##                        3                        3                        4
##              Switzerland                   Greece              Philippines
##                        4                        5                        6
##                   Canada                    Italy            United States
##                        7                        8                       18
##                    India
##                       32
```

```r
print(freq[length(freq)])
```

```
## India
##    32
```