ThinkOrSwim API in R example

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Summary

Below shows the sample R code to submit TOS api requests to retrieve historical stock prices and stock quotes.

Important Note

You will need to register as a TOS api developer. See https://developer.tdameritrade.com/.
After which, you will need to create your own app to obtain your `Client ID`. See video https://www.youtube.com/watch?v=mLjtVVqp5iw.

Import the libraries

```r
library(httr)
library(jsonlite)
library(lubridate)
library(dplyr)
# library(rlist)

## Input your client id here
CLIENT_ID <- 'XXXXX'
```

Price History

Refer to the below links for api specifications:
1. https://developer.tdameritrade.com/price-history/apis
2. https://developer.tdameritrade.com/price-history/apis/get/marketdata/%7Bsymbol%7D/pricehistory

```r
## Update stock symbol here
symbol <- 'AAPL'

price_endpoint <- paste0('https://api.tdameritrade.com/v1/marketdata/',
                         symbol,'/pricehistory')

## Change the price history parameters here
payload = list(apikey = CLIENT_ID, periodType = 'day', period = '10',
               frequencyType = 'minute', frequency='15')
```

```r
request = GET(url = price_endpoint, query = payload)
response <- content(request, as = "text", encoding = "UTF-8")
price <- fromJSON(response, flatten = TRUE) %>% data.frame()
price <- select(price,
                symbol,
                datetime = candles.datetime,
                open = candles.open,
                high = candles.high,
                low = candles.low,
                close = candles.close,
                volume = candles.volume
)
price$datetime = as_datetime(price$datetime/1000)

head(price)
```

```
##   symbol            datetime   open   high    low  close volume
## 1   AAPL 2020-06-08 11:00:00 330.59 330.99 330.35 330.84  22485
## 2   AAPL 2020-06-08 11:15:00 330.99 331.50 330.96 331.11  31015
## 3   AAPL 2020-06-08 11:30:00 331.13 331.47 330.85 330.85  12758
## 4   AAPL 2020-06-08 11:45:00 330.72 330.95 330.35 330.79  12374
## 5   AAPL 2020-06-08 12:00:00 330.79 330.80 329.92 330.12  27123
## 6   AAPL 2020-06-08 12:15:00 330.30 330.68 329.85 330.68  22522
```

```r
tail(price)
```

```
##     symbol            datetime     open     high    low  close volume
## 623   AAPL 2020-06-19 22:30:00 348.1000 348.1000 347.76 347.80   2847
## 624   AAPL 2020-06-19 22:45:00 347.7600 347.7800 347.50 347.60   7340
## 625   AAPL 2020-06-19 23:00:00 347.7499 347.7499 347.56 347.56   2273
## 626   AAPL 2020-06-19 23:15:00 347.6400 347.6400 347.55 347.55   1756
## 627   AAPL 2020-06-19 23:30:00 347.5500 347.6000 347.52 347.60   2606
## 628   AAPL 2020-06-19 23:45:00 347.5500 347.7000 347.06 347.07   8505
```

Stock Quotes

Refer to the below links for api specifications:
1. https://developer.tdameritrade.com/quotes/apis
2. https://developer.tdameritrade.com/quotes/apis/get/marketdata/%7Bsymbol%7D/quotes

```r
## Update stock symbol here
symbol <- 'AAPL'

quotes_endpoint <- paste0('https://api.tdameritrade.com/v1/marketdata/',
                          symbol,'/quotes')
payload = list(apikey = CLIENT_ID)
request <- GET(url = quotes_endpoint, query = payload)

response <- content(request, as = "text", encoding = "UTF-8")
quotes <- fromJSON(response, flatten = TRUE) %>% data.frame()
t(quotes)
```

```
##                                         [,1]
```

```
## AAPL.assetType                             "EQUITY"
## AAPL.assetMainType                         "EQUITY"
## AAPL.cusip                                 "037833100"
## AAPL.symbol                                "AAPL"
## AAPL.description                           "Apple Inc. - Common Stock"
## AAPL.bidPrice                              "347.07"
## AAPL.bidSize                               "600"
## AAPL.bidId                                 "K"
## AAPL.askPrice                              "347.2"
## AAPL.askSize                               "100"
## AAPL.askId                                 "K"
## AAPL.lastPrice                             "347.135"
## AAPL.lastSize                              "0"
## AAPL.lastId                                "D"
## AAPL.openPrice                             "354.635"
## AAPL.highPrice                             "356.56"
## AAPL.lowPrice                              "345.15"
## AAPL.bidTick                               " "
## AAPL.closePrice                            "349.72"
## AAPL.netChange                             "-2.585"
## AAPL.totalVolume                           "66118952"
## AAPL.quoteTimeInLong                       "1.592611e+12"
## AAPL.tradeTimeInLong                       "1.592611e+12"
## AAPL.mark                                  "349.72"
## AAPL.exchange                              "q"
## AAPL.exchangeName                          "NASD"
## AAPL.marginable                            "TRUE"
## AAPL.shortable                             "TRUE"
## AAPL.volatility                            "0.0153"
## AAPL.digits                                "4"
## AAPL.52WkHigh                              "356.56"
## AAPL.52WkLow                               "192.58"
## AAPL.nAV                                   "0"
## AAPL.peRatio                               "27.4161"
## AAPL.divAmount                             "3.28"
## AAPL.divYield                              "0.94"
## AAPL.divDate                               "2020-05-08 00:00:00.000"
## AAPL.securityStatus                        "Normal"
## AAPL.regularMarketLastPrice                "349.72"
## AAPL.regularMarketLastSize                 "16"
## AAPL.regularMarketNetChange                "0"
## AAPL.regularMarketTradeTimeInLong          "1.592597e+12"
## AAPL.netPercentChangeInDouble              "-0.7392"
## AAPL.markChangeInDouble                    "0"
## AAPL.markPercentChangeInDouble             "0"
## AAPL.regularMarketPercentChangeInDouble    "0"
## AAPL.delayed                               "TRUE"
```

References

1. https://developer.tdameritrade.com/
2. https://www.youtube.com/watch?v=mLjtVVqp5iw
3. https://www.youtube.com/watch?v=jpWZyd4fU7c