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#
# How to Access the LP DAAC Data Pool with R
# The following R code example demonstrates how to configure a connection to
download data from an
# Earthdata Login enabled server, specifically the LP DAAC Data Pool.
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#
# Author: Cole Krehbiel
# Last Updated: 11/14/2019
#
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#
# Check for required packages, install if not previously installed
if ("sys" %in% rownames(installed.packages()) == FALSE)
{install.packages("sys")}
if ("getPass" %in% rownames(installed.packages()) == FALSE) {
install.packages("getPass")}
if ("httr" %in% rownames(installed.packages()) == FALSE) {
install.packages("httr")}

# Load necessary packages into R
library(sys)
library(getPass)
library(httr)
# ----------------------------------SET UP
ENVIRONMENT------------------------------------------- #
# IMPORTANT: Update the line below if you want to download to a different
directory (ex: "c:/data/")
dl_dir <- Sys.getenv("HOME")                                    # Set dir to
download files to
setwd(dl_dir)                                                   # Set the working
dir to the dl_dir
usr <- file.path(Sys.getenv("USERPROFILE"))                     # Retrieve home
dir (for netrc file)
if (usr == "") {usr = Sys.getenv("HOME")}                       # If no user
profile exists, use home
netrc <- file.path(usr,'.netrc', fsep = .Platform$file.sep)  # Path to netrc
file

# -----------------------------------CREATE .NETRC
FILE------------------------------------------ #
# If you already have a .netrc file with your Earthdata Login credentials
stored in your home
# directory, this portion will be skipped. Otherwise you will be prompted for
your NASA Earthdata
# Login Username/Password and a netrc file will be created to store your
credentials (in home dir)
if (file.exists(netrc) == FALSE || grepl("urs.earthdata.nasa.gov",
readLines(netrc)) == FALSE) {
  netrc_conn <- file(netrc)
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  # User will be prompted for NASA Earthdata Login Username and Password below
  writeLines(c("machine urs.earthdata.nasa.gov",
               sprintf("login %s", getPass(msg = "Enter NASA Earthdata Login
Username \n (or create an account at urs.earthdata.nasa.gov) :")),
               sprintf("password %s", getPass(msg = "Enter NASA Earthdata
Login Password:"))), netrc_conn)
  writeLines(c("machine oceandata.sci.gsfc.nasa.gov",
               sprintf("login %s", getPass(msg = "Enter NASA Earthdata Login
Username \n (or create an account at urs.earthdata.nasa.gov) :")),
               sprintf("password %s", getPass(msg = "Enter NASA Earthdata
Login Password:"))), netrc_conn)
  close(netrc_conn)
}

# ----------------------------CONNECT TO DATA POOL AND DOWNLOAD
FILES------------------------------ #
# Below, define either a single link to a file for download, a list of links,
or a text file
# containing links to the desired files to download. For a text file, there
should be 1 file link
# listed per line. Here we show examples of each of the three ways to download
files.
# **IMPORTANT: be sure to update the links for the specific files you are
interested in downloading.

# 1. Single file (this is just an example link, replace with your desired file
to download):
files <- "https://oceandata.sci.gsfc.nasa.gov/directaccess/CYAN/L3SMI/
2020/366/L2020366.L3m_DAY_CYAN_CI_cyano_CYAN_CONUS_300m_1_1.tif"

# 2. List of files (these are just example links, replace with your desired
files to download:
#files <- c("https://e4ftl01.cr.usgs.gov/MOLA/MYD09GA.006/2002.07.06/
MYD09GA.A2002187.h10v04.006.2015149103018.hdf",
#           "https://e4ftl01.cr.usgs.gov/MOLT/MOD11A1.006/2000.03.09/
MOD11A1.A2000069.h00v08.006.2015057070313.hdf")

# 3. Textfile containing links (just an example, replace with your text file
location):
#files <- readLines("C:/datapool_downloads/URL_file_list.txt", warn = FALSE)

# Loop through all files
for (i in 1:length(files)) {
  filename <-  tail(strsplit(files[i], '/')[[1]], n = 1) # Keep original
filename

  # Write file to disk (authenticating with netrc) using the current
directory/filename
  response <- GET(files[i], write_disk(filename, overwrite = TRUE),
progress(),
                  config(netrc = TRUE, netrc_file = netrc), set_cookies("LC" =
"cookies"))

  # Check to see if file downloaded correctly
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  if (response$status_code == 200) {
    print(sprintf("%s downloaded at %s", filename, dl_dir))
  } else {
    print(sprintf("%s not downloaded. Verify that your username and password
are correct in %s", filename, netrc))
  }
}


###
# Issue: ---
# Author: Catalino Cuadrado (catalino.cuadrado@nasa.gov)
# Date: 12-19-2018



################################################################################
# Set up R
# You may need to install the httr package.
# install.packages("httr")
setwd("C:/Users/ygrund/ygrund_C_Users/PROJECTS/HABs/Branches/2022/
HAB_Shiny_app")
library(httr)
netrc_path <- "./Earthdata/.netrc"
cookie_path <- "./Earthdata/.urs_cookies"
downloaded_file_path <- "./Earthdata/2020/
L2020301.L3m_DAY_CYAN_CI_cyano_CYAN_CONUS_300m_1_1.tif"
# Before using the script
#Set up your ~/.netrc file as listed here: https://wiki.earthdata.nasa.gov/
display/EL/How+To+Access+Data+With+cURL+And+Wget
set_config(config(followlocation=1,netrc=1,netrc_file=netrc_path,cookie=cookie_path,cookie
httr::GET(url = "https://oceandata.sci.gsfc.nasa.gov/directaccess/CYAN/L3SMI/
2020/301/L2020301.L3m_DAY_CYAN_CI_cyano_CYAN_CONUS_300m_1_1.tif",
          write_disk(downloaded_file_path, overwrite = TRUE))
```