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#Name: Daniel Lewis
#Description: Homework Assignment 2
#Date: 01/24/2019 (JST)
#--------------HW2: Writing Functions -----------------
#Copy mtcars into myCars
myCars <- mtcars
#Step   1:      What    is      the     hp      (hp     stands  for     “horse  power”)
#1) What        is      the     highest hp?
index <-which.max(myCars$hp)
myCars$hp[index]
#2) Which       car     has     the     highest hp?
rownames(myCars)[index]
#Step   2:      Explore mpg     (mpg    stands  for     “miles  per     gallon”)
#3) What        is      the     highest mpg?
index <-which.max(myCars$mpg)
myCars$mpg[index]
#4) Which       car     has     the     highest mpg?
rownames(myCars)[index]
#5) Create      a       sorted  dataframe,      based   on      mpg
sortedMPG <- myCars[order(-myCars$mpg),]
sortedMPG

#Step   3:      Which   car     has     the     “best”  combination     of      mpg     and     hp?
#6) What logic  did     you     use?
#for this section I used a value derived by deviding the MPG by the ammount of HP.

#7) Which       car?
efficency <- data.frame(myCars, (myCars$mpg/myCars$hp))
colnames(efficency)[colnames(efficency)=="X.myCars.mpg.myCars.hp."] <- "eff"
efficency <- efficency[order(-efficency$eff),]
index <-which.max(efficency$eff)
rownames(efficency)[index]

#Step   4:       Which  car     has “best”      car combination of      mpg     and     hp,     where   mpg     and
hp      must
#be     given   equal   weight?
#For this section we should use the scale function in r, than follow the efficency math from step3.
efficency2 <- data.frame(scale(myCars))
efficency2 <- data.frame(efficency2, (efficency2$mpg/efficency2$hp))
colnames(efficency2)[colnames(efficency2)=="X.efficency2.mpg.efficency2.hp."] <- "eff"
efficency2 <- efficency2[order(-efficency2$eff),]
rownames(efficency2)[1]
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