Programming Assignment 3 - Rank Hospital

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# Ranking hospitals by outcome in a state

rankhospital <- function(state, outcome, num="best") {  
 #Read the dataset  
 outcome\_dataset <- read.csv("outcome-of-care-measures.csv", colClasses = "character")  
 #Read the subset of data required  
 outcome\_subset <- subset(outcome\_dataset, select = c(2,7,11,17,23))  
 #Assign column names to the dataset  
 colnames(outcome\_subset) <- c("hospital name", "state", "heart attack", "heart failure", "pneumonia")  
 #Check for validity of the variables  
 if(!str\_to\_upper(state) %in% outcome\_subset$state)  
 {  
 stop("Invalid State")  
 }   
 else if(!(outcome %in% colnames(outcome\_subset[,3:5])))  
 {  
 stop("Invalid Outcome")  
 }  
 else if(is.numeric(num))   
 {  
 outcome\_row\_indices <- which(outcome\_subset[,"state"]==str\_to\_upper(state))  
 outcome\_filtered <- outcome\_subset[outcome\_row\_indices,]  
   
 if(!(num <= length(outcome\_filtered[,1])))  
 {  
 result <- "NA"  
 }  
 else   
 {  
 #Convert the outcome column from character to numeric  
 outcome\_filtered[,outcome] <- as.numeric(outcome\_filtered[,outcome])  
 #Order the outcome column by hospital name  
 outcome\_filtered <- outcome\_filtered[order(outcome\_filtered[,"hospital name"]),]  
 #Remove missing values from the outcome before ranking them  
 outcome\_filtered <- outcome\_filtered[complete.cases(outcome\_filtered[,outcome]),]  
 #Create a rank variable and rank the dataset based on the outcome  
 outcome\_filtered <- outcome\_filtered %>% mutate(rank = rank(outcome\_filtered[,outcome], na.last = TRUE, ties.method="first"))  
 result <- outcome\_filtered[,"hospital name"][outcome\_filtered$rank==num]  
 }  
 }  
 else if(!is.numeric(num))  
 {  
 if(num=="best")  
 {  
 outcome\_row\_indices <- which(outcome\_subset[,"state"]==str\_to\_upper(state))  
 outcome\_filtered <- outcome\_subset[outcome\_row\_indices,]  
 outcome\_filtered[,outcome] <- as.numeric(outcome\_filtered[,outcome])  
 outcome\_filtered <- outcome\_filtered[order(outcome\_filtered[,"hospital name"]),]  
 outcome\_filtered <- outcome\_filtered[complete.cases(outcome\_filtered[,outcome]),]  
 outcome\_filtered <- outcome\_filtered %>% mutate(rank = rank(outcome\_filtered[,outcome], na.last = TRUE, ties.method="first"))  
 result <- outcome\_filtered[,"hospital name"][outcome\_filtered$rank==min(outcome\_filtered$rank)]  
 }  
 else if(num=="worst")  
 {  
 outcome\_row\_indices <- which(outcome\_subset[,"state"]==str\_to\_upper(state))  
 outcome\_filtered <- outcome\_subset[outcome\_row\_indices,]  
 outcome\_filtered[,outcome] <- as.numeric(outcome\_filtered[,outcome])  
 outcome\_filtered <- outcome\_filtered[order(outcome\_filtered[,"hospital name"]),]  
 outcome\_filtered <- outcome\_filtered[complete.cases(outcome\_filtered[,outcome]),]  
 outcome\_filtered <- outcome\_filtered %>% mutate(rank = rank(outcome\_filtered[,outcome], na.last = TRUE, ties.method="first"))  
 result <- outcome\_filtered[,"hospital name"][outcome\_filtered$rank==max(outcome\_filtered$rank)]  
 }  
 }  
 else  
 {  
 stop("invalid rank")  
 }  
 return(result)  
   
}

rankhospital("NC", "heart attack", "worst")

## [1] "WAYNE MEMORIAL HOSPITAL"

rankhospital("TX", "heart failure", 4)

## [1] "DETAR HOSPITAL NAVARRO"

rankhospital("MD", "heart attack", "worst")

## [1] "HARFORD MEMORIAL HOSPITAL"

rankhospital("MN", "heart attack", 5000)

## [1] "NA"

rankhospital("NC", "heart attack", "worst")

## [1] "WAYNE MEMORIAL HOSPITAL"

rankhospital("WA", "heart attack", 7)

## [1] "YAKIMA VALLEY MEMORIAL HOSPITAL"

rankhospital("TX", "pneumonia", 10)

## [1] "SETON SMITHVILLE REGIONAL HOSPITAL"

rankhospital("NY", "heart attack", 7)

## [1] "BELLEVUE HOSPITAL CENTER"