Project Code

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# Read in Data:  
library(dplyr)

## Warning: package 'dplyr' was built under R version 3.4.3

##   
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':  
##   
## filter, lag

## The following objects are masked from 'package:base':  
##   
## intersect, setdiff, setequal, union

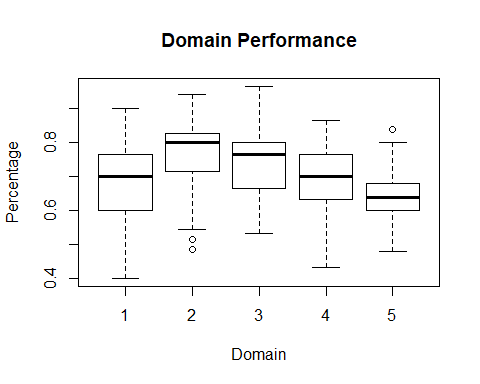
library(knitr)

## Warning: package 'knitr' was built under R version 3.4.3

options(xtable.floating = FALSE)  
options(xtable.timestamp = "")  
  
DomainA <- read.csv('C:/Users/imoe9/Documents/School Work/STAT PROG/R Files/STAT 123/Project/Data.and.Domains/Domains FormA.csv')  
DomainB <- read.csv('C:/Users/imoe9/Documents/School Work/STAT PROG/R Files/STAT 123/Project/Data.and.Domains/Domains FormB.csv')  
FormA <- read.csv('C:/Users/imoe9/Documents/School Work/STAT PROG/R Files/STAT 123/Project/Data.and.Domains/FormA.csv', header = FALSE, stringsAsFactors = FALSE)  
FormB <- read.csv('C:/Users/imoe9/Documents/School Work/STAT PROG/R Files/STAT 123/Project/Data.and.Domains/FormB.csv', header = FALSE, stringsAsFactors = FALSE)  
  
DomainA <- tbl\_df(DomainA)  
DomainB <- tbl\_df(DomainB)  
FormA <- tbl\_df(FormA)  
FormB <- tbl\_df(FormB)  
  
# Student Scores  
  
Scores <- function(Form) {  
 score <- 0  
 percentage <- 0  
 for(i in 1:nrow(Form)) {  
 score[i] <- sum(Form[1,-1] == Form[i,-1])  
 percentage[i] <- sum(Form[1,-1] == Form[i,-1]) / (ncol(Form) - 1)  
 }  
 return(score)  
}  
  
ScoreA <- Scores(FormA)  
ScoreA <- ScoreA[-1]  
PercentagesA <- ScoreA / (ncol(FormA) - 1)  
  
ScoreB <- Scores(FormB)  
ScoreB <- ScoreB[-1]  
PercentagesB <- ScoreB / (ncol(FormB) - 1)  
  
  
# Domain Scores  
Domac <- rbind(NA,DomainA)  
FormAD <- cbind(t(FormA), Domac)  
Dombc <- rbind(NA, DomainB)  
FormBD <- cbind(t(FormB), Dombc)  
  
DScore <- function(Form, PF, x) {  
 fil <- Form %>% filter(Domain.. == x | NA)  
 red <- cbind(PF[,1],t(fil[,1:(length(Form)-4)]))  
 Dsco <- Scores(red)  
 return(Dsco)  
}  
  
DomainScoreA <- cbind(DScore(FormAD,FormA, 1),DScore(FormAD,FormA, 2),DScore(FormAD,FormA, 3),DScore(FormAD,FormA, 4),DScore(FormAD,FormA, 5))

## Warning: package 'bindrcpp' was built under R version 3.4.3

DomainScoreB <- cbind(DScore(FormBD,FormB, 1),DScore(FormBD,FormB, 2),DScore(FormBD,FormB, 3),DScore(FormBD,FormB, 4),DScore(FormBD,FormB, 5))  
  
DomainPerA <- cbind(DScore(FormAD,FormA, 1),DScore(FormAD,FormA, 2),DScore(FormAD,FormA, 3),DScore(FormAD,FormA, 4),DScore(FormAD,FormA, 5))  
DomainPerB <- cbind(DScore(FormBD,FormB, 1),DScore(FormBD,FormB, 2),DScore(FormBD,FormB, 3),DScore(FormBD,FormB, 4),DScore(FormBD,FormB, 5))  
  
DomainPerA <- cbind(DomainScoreA[,1] / DomainScoreA[1,1],DomainScoreA[,2] / DomainScoreA[1,2],DomainScoreA[,3] / DomainScoreA[1,3],  
 DomainScoreA[,4] / DomainScoreA[1,4],DomainScoreA[,5] / DomainScoreA[1,5])  
DomainPerB <- cbind(DomainScoreB[,1] / DomainScoreB[1,1],DomainScoreB[,2] / DomainScoreB[1,2],DomainScoreB[,3] / DomainScoreB[1,3],  
 DomainScoreB[,4] / DomainScoreB[1,4],DomainScoreB[,5] / DomainScoreB[1,5])  
  
# Section A  
  
#table with student name, exam form, score, percentage, domain scores and percentages  
tbla <- cbind(FormA[-1,1],"A",ScoreA,PercentagesA,DomainScoreA[-1,],DomainPerA[-1,])  
colnames(tbla) <- c("StudentID","Form","Score","Percentage","DScore 1","DScore 2","DScore 3","DScore 4","DScore 5",  
 "D% 1","D% 2","D% 3","D% 4","D% 5")  
tbla <- tbl\_df(tbla)  
  
tblb <- cbind(FormB[-1,1],"B",ScoreB,PercentagesB,DomainScoreB[-1,],DomainPerB[-1,])  
colnames(tblb) <- c("StudentID","Form","Score","Percentage","DScore 1","DScore 2","DScore 3","DScore 4","DScore 5",  
 "D% 1","D% 2","D% 3","D% 4","D% 5")  
tblb <- tbl\_df(tblb)  
  
  
tbl1 <- rbind(tbla,tblb)  
tbl1$StudentID <- as.numeric(tbl1$StudentID)   
tbl1 <- arrange(tbl1, StudentID)  
tbl1$StudentID <- sprintf("%1.f", tbl1$StudentID)  
tbl1$Percentage <- sprintf("%1.1f%%", 100\*tbl1$Percentage)  
tbl1[,10] <- sprintf("%1.1f%%", 100\*tbl1$`D% 1`)  
tbl1[,11] <- sprintf("%1.1f%%", 100\*tbl1$`D% 2`)  
tbl1[,12] <- sprintf("%1.1f%%", 100\*tbl1$`D% 3`)  
tbl1[,13] <- sprintf("%1.1f%%", 100\*tbl1$`D% 4`)  
tbl1[,14] <- sprintf("%1.1f%%", 100\*tbl1$`D% 5`)  
  
tbl2 <- arrange(tbl1, desc(Percentage))  
tbl2 <- tbl2[,c(4,1:3,5:14)]  
  
# Question Performance  
QScore <- function(data) {  
 qscore <- 0  
 for(i in 1:ncol(data)){  
 qscore[i] <- sum(as.character(data[1,i]) == data[-1,i]) / (nrow(data) - 1)  
 }  
 return(qscore)  
}  
  
QscA <- QScore(FormA)  
QscB <- QScore(FormB)  
  
# Section B  
QtblA <- cbind("A",1:(ncol(FormA)-1),QscA[-1])  
QtblB <- cbind("B",1:(ncol(FormB)-1),QscB[-1])  
Qtbl <- rbind(QtblA, QtblB)  
colnames(Qtbl) <- c("Form","Question","Percentage")  
Qtbl <- tbl\_df(Qtbl)  
  
Qtbl2 <- rbind(QtblA, QtblB)  
Qtbl2 <- Qtbl[,c(3,1,2)]  
Qtbl2 <- arrange(Qtbl2, Percentage)  
  
Qtbl$Percentage <- as.numeric(Qtbl$Percentage)  
Qtbl$Percentage <- sprintf("%1.1f%%", 100\*Qtbl$Percentage)  
Qtbl2$Percentage <- as.numeric(Qtbl2$Percentage)  
Qtbl2$Percentage <- sprintf("%1.1f%%", 100\*Qtbl2$Percentage)  
  
# Tables and Plots  
ktbl1 <- kable(tbl1, longtable = TRUE)  
ktbl2 <- kable(tbl2)  
box <- boxplot.matrix(rbind(DomainPerA[-1,], DomainPerB[-1,]),  
 xlab = "Domain",  
 ylab = "Percentage",  
 main = "Domain Performance")



kQtbl <- kable(Qtbl)  
kQtbl2 <- kable(Qtbl2)