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# Question 1

lm.fit <- lm(Outstate ~ ., data = College)
lm.fit

summary(lm.fit)

#Question 2 a
install.packages("class")
library(class)

train <- seq(1,500)
train.x <- cbind(Apps, Accept, Enroll,Top10perc, Top25perc,
                 F.Undergrad, P.Undergrad, Outstate, Room.Board,
                 Books, Personal, PhD, Terminal, S.F.Ratio,
                 perc.alumni, Expend, Grad.Rate)[train,]
test <- seq(501,777)
test.x <- cbind(Apps, Accept, Enroll,Top10perc, Top25perc,
                F.Undergrad, P.Undergrad, Outstate, Room.Board,
                Books, Personal, PhD, Terminal, S.F.Ratio,
                perc.alumni, Expend, Grad.Rate)[test,]
train.Y <- Private[train]

# 2b
set.seed(1)
knn.pred <- knn(train.x, test.x,train.Y, k=1)
summary(knn.pred)

set.seed(1)
knn.pred1 <- knn(train.x, test.x,train.Y, k=10)
summary(knn.pred1)

set.seed(1)
knn.pred2 <- knn(train.x, test.x,train.Y, k=100)
summary(knn.pred2)

#2c
test.Y <- Private[test]
table(knn.pred, test.Y)
table(knn.pred1, test.Y)
table(knn.pred2, test.Y)

#2d
mean(knn.pred == test.Y)
mean(knn.pred1 == test.Y)
mean(knn.pred2 == test.Y)
```