3.)

- Create a random data that resembles the original data. A column target with class as 1.
- Randomly permute the features in the dataset and name the target as 0.
- Build a decision tree model.
- From the model, we can observe that it has only single root indicating that the features do not have any predictive power to do a classification.
- To cross verify, we can predict the model on the training set itself and observe that the probability for every row is one-half for both the classes.
- Therefore, we can conclude that it doesn't have any predictive power.

The probabilities can be observed below:

```
Call:
rpart(formula = target ~ ., data = Mixed.data)
  n= 18818

    CP nsplit rel error xerror xstd
1 0.01      0         1      0    0

Node number 1: 18818 observations
  predicted class=0  expected loss=0.5  P(node) =1
    class counts:  9409  9409
   probabilities: 0.500 0.500

> predict_new = predict(model, Mixed.data[,-c(15)])
> predict_new
          0   1
    [1,] 0.5 0.5
    [2,] 0.5 0.5
    [3,] 0.5 0.5
    [4,] 0.5 0.5
    [5,] 0.5 0.5
```