```
> source('C:/Users/hp1/Desktop/R_CODE_AND_OUTPUT/DECISION_TREE.r', echo=TRUE)


> library(party)
Loading required package: grid
Loading required package: mvtnorm
Loading required package: modeltools
Loading required package: stats4
Loading required package: strucchange
Loading required package: zoo

Attaching package: ‘zoo’

The following objects are masked from ‘package:base’:

    as.Date, as.Date.numeric

Loading required package: sandwich

> str(train)
'data.frame':	32769 obs. of  10 variables:
 $ ACTION         : int  1 1 1 1 1 0 1 1 1 1 ...
 $ RESOURCE       : int  39353 17183 36724 36135 42680 45333 25993 19666 31246 78766 ...
 $ MGR_ID         : int  85475 1540 14457 5396 5905 14561 17227 4209 783 56683 ...
 $ ROLE_ROLLUP_1   : int  117961 117961 118219 117961 117929 117951 117961 117961 117961
118079 ...
```

$ ROLE_ROLLUP_2 : int 118300 118343 118220 118343 117930 117952 118343 117969 118413 118080 …

$ ROLE_DEPTNAME : int 123472 123125 117884 119993 119569 118008 123476 118910 120584 117878 …

$ ROLE_TITLE : int 117905 118536 117879 118321 119323 118568 118980 126820 128230 117879 …

$ ROLE_FAMILY_DESC: int 117906 118536 267952 240983 123932 118568 301534 269034 302830 304519 …

$ ROLE_FAMILY : int 290919 308574 19721 290919 19793 19721 118295 118638 4673 19721 …

$ ROLE_CODE : int 117908 118539 117880 118322 119325 118570 118982 126822 128231 117880 …

```
> tra <-ctree(ACTION ~ROLE_ROLLUP_1+ROLE_TITLE+ROLE_CODE, data =train)
```

```
> print(tra)
```

Conditional inference tree with 5 terminal nodes

Response: ACTION

Inputs: ROLE_ROLLUP_1, ROLE_TITLE, ROLE_CODE

Number of observations: 32769

1) ROLE_CODE <= 117880; criterion = 0.994, statistic = 9.635

2)* weights = 1256

1) ROLE_CODE > 117880

3) ROLE_CODE <= 117908; criterion = 0.974, statistic = 6.846

4)* weights = 4794

3) ROLE_CODE > 117908

```
    5) ROLE_CODE <= 117948; criterion = 0.999, statistic = 12.456
      6)*  weights = 329
    5) ROLE_CODE > 117948
      7) ROLE_CODE <= 119900; criterion = 0.997, statistic = 10.57
        8)*  weights = 19046
      7) ROLE_CODE > 119900
        9)*  weights = 7344

> plot(tra)

> predictedX <- predict(tra, train)

> plot(predictedX)

> table(train$ACTION, predictedX > 0.5)

     TRUE
  0  1897
  1 30872

> ROCRpred = prediction(predictedX, train$ACTION)

> auc = as.numeric(performance(ROCRpred, "auc")@y.values)

> ROCRperf = performance(ROCRpred, "tpr", "fpr")
```

```
> plot(ROCRperf)


> auc

[1] 0.5798906

>
```