KNN_R

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```
library(ISLR)
library(class)
```

```
attach(Smarket)
```

```
train = (Year<2005)
train.X = cbind(Lag1,Lag2)[train,]
dim(train.X)
```

```
## [1] 998   2
```

```
test.X = cbind(Lag1,Lag2)[!train,]
dim(test.X)
```

```
## [1] 252   2
```

```
table(Direction)
```

```
## Direction
## Down   Up
##  602  648
```

```
train.Direction = Direction[train]
table(train.Direction)
```

```
## train.Direction
## Down   Up
##  491  507
```

```
Direction.2005 = Direction[!train]
table(Direction.2005)
```

```
## Direction.2005
## Down   Up
##  111  141
```

KNN Regression

```
set.seed(1)
```

knn(a, b, c, d): a is x of train data; b is x of test data; c is y of train data, d is to define how many k we will use.

knn.pred is all the (predicted test.Y) we will have.

```
knn.pred = knn(train.X,test.X,train.Direction,k=1)
length(knn.pred)
```

```
## [1] 252
```

we compare (predicted test.Y) with (origial test.Y)

```
table(knn.pred,Direction.2005)
```

```
##         Direction.2005
## knn.pred Down Up
##     Down   43 58
##     Up     68 83
```

Use mean(knn.pred == Direction.2005) to get the accuracy.

```
accurate_rate = mean(knn.pred == Direction.2005)
accurate_rate
```

```
## [1] 0.5
```

```
error_rate = 1 - mean(knn.pred == Direction.2005)
```