Homework Day 6

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January 16, 2015

4

a. 1/10

b. 1/100

c. (1/10)^100

d. If we keep the observations within the same range for each dimension, as the number of dimensions increases, the proportion of observations available for use exponentially decreases.

6

a

(e^(-6+.05*40+3.5))/(1+e^(-6+.05*40+3.5))

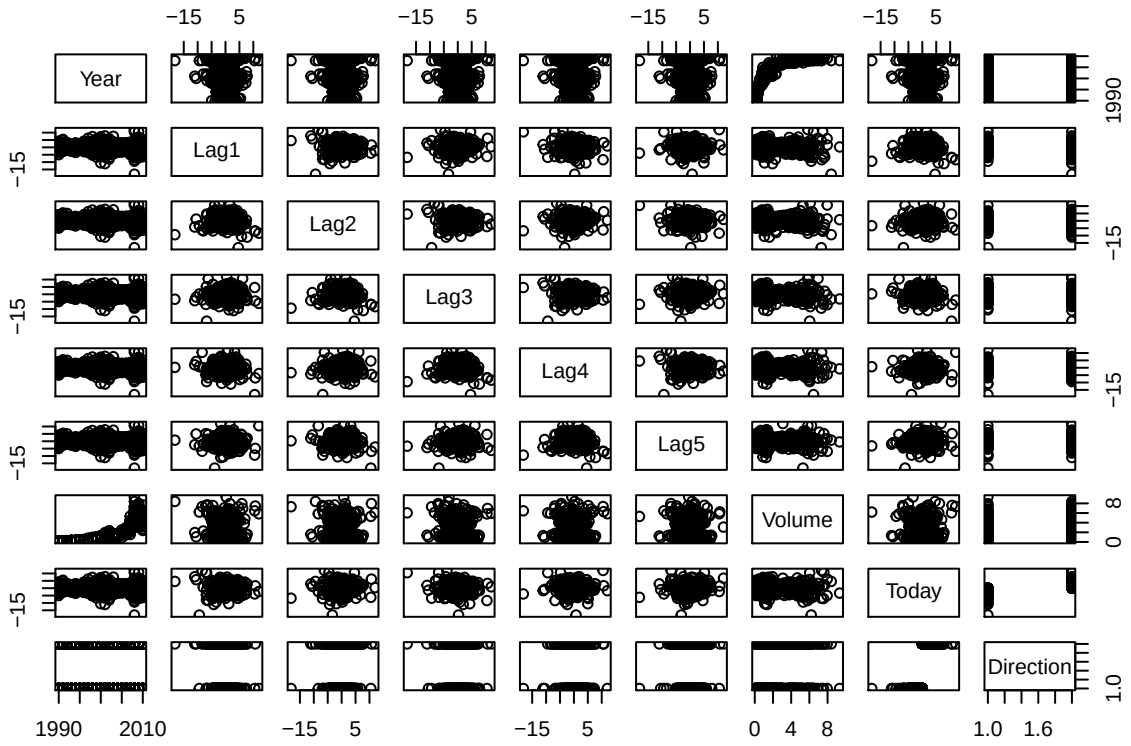
#.37754 #b 50 hours #**9** #a. .27 #b. .1905 #**10** #a

```
library(ISLR)
require(Weekly)
```

```
## Loading required package: Weekly
```

```
## Warning in library(package, lib.loc = lib.loc, character.only = TRUE,
## logical.return = TRUE, : there is no package called 'Weekly'
```

```
pairs(Weekly)
```



#The strongest correlation appears to be with year and volume. #b.

```
summary(glm(Direction~Volume+Lag1+Lag2+Lag3+Lag4+Lag5,family=binomial,data=Weekly))
```

```
##
## Call:
## glm(formula = Direction ~ Volume + Lag1 + Lag2 + Lag3 + Lag4 +
##     Lag5, family = binomial, data = Weekly)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.6949  -1.2565   0.9913   1.0849   1.4579
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept)  0.26686    0.08593   3.106   0.0019 **
## Volume      -0.02274    0.03690  -0.616   0.5377
## Lag1        -0.04127    0.02641  -1.563   0.1181
## Lag2         0.05844    0.02686   2.175   0.0296 *
## Lag3        -0.01606    0.02666  -0.602   0.5469
## Lag4        -0.02779    0.02646  -1.050   0.2937
## Lag5        -0.01447    0.02638  -0.549   0.5833
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1496.2  on 1088  degrees of freedom
## Residual deviance: 1486.4  on 1082  degrees of freedom
## AIC: 1500.4
##
```

```
## Number of Fisher Scoring iterations: 4
```

Lag2 is statistically significant

c.

d.

```
Weekly2 <- Weekly[c(1990:2008),]
summary(glm(Direction~Lag2,family=binomial,data=Weekly))
```

```
##
## Call:
## glm(formula = Direction ~ Lag2, family = binomial, data = Weekly)
##
## Deviance Residuals:
##    Min      1Q  Median      3Q     Max
## -1.564  -1.267   1.008   1.086   1.386
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept)  0.21473    0.06123   3.507 0.000453 ***
## Lag2         0.06279    0.02636   2.382 0.017230 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1496.2  on 1088  degrees of freedom
## Residual deviance: 1490.4  on 1087  degrees of freedom
## AIC: 1494.4
##
## Number of Fisher Scoring iterations: 4
```

g

12

a.

```
Power <-function(x){
  x<-2^3
  print(x)}
Power(x)
```

```
## [1] 8
```

b.

```
Power2 <- function(x,a){
  solution<-x^a
  print(solution)
}
Power2(3,8)
```

```
## [1] 6561
```

c.

```
Power2(10,3)
```

```
## [1] 1000
```

```
Power2(8,17)
```

```
## [1] 2.2518e+15
```

```
Power2(131,3)
```

```
## [1] 2248091
```

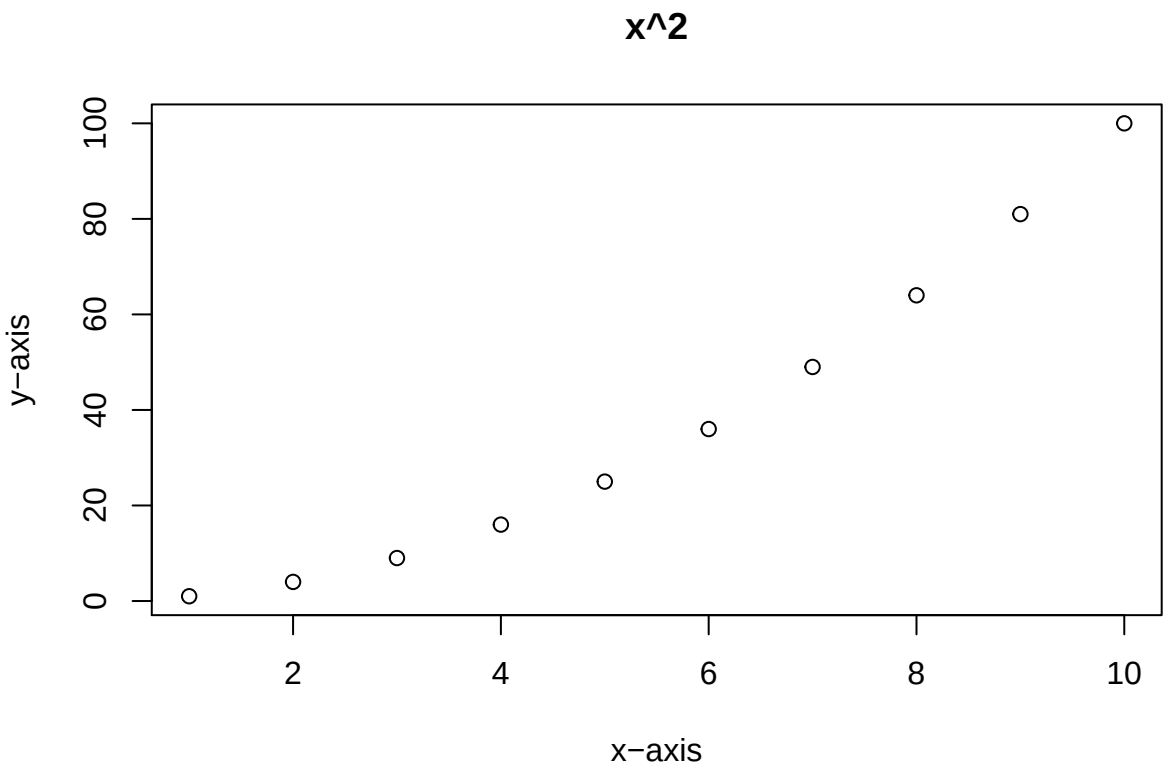
d.

```
Power3 <- function(x,a){
  result<-x^a
  return(result)
}
Power3(2,3)
```

```
## [1] 8
```

e.

```
plot(Power3(1:10,2),xlab="x-axis",ylab="y-axis",main="x^2")
```


x^2
y−axis
0
20
40
60
80
100
2
4
6
8
10
x−axis