

Lab - 1

Lab1.R x Untitled1* x

Source on Save Run Source

```
1 # Chapter 2 Lab: Introduction to R
2
3 # Basic Commands
4
5 x <- c(1,3,2,5)
6 x
7 x = c(1,6,2)
8 x
9 y = c(1,4,3)
10 length(x)
11 length(y)
12 x + y
13 ls()
14 rm(x,y)
15 ls()
16
17 x <- matrix(data = c(1,2,3,4), nrow = 2, ncol = 2)
18 x
19 x <- matrix(c(1,2,3,4), 2, 2)
20 matrix(c(1,2,3,4), 2, 2, byrow = TRUE)
21 sqrt(x)
22 x^2
23 |
24
```

23:1 (Top Level)

R Script

Console Terminal x Jobs x

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```
> x
[1] 1 6 2
> y = c(1,4,3)
> length(x)
[1] 3
> length(y)
[1] 3
> x + y
[1] 2 10 5
> ls()
[1] "x" "y"
> rm(x,y)
> ls()
character(0)
> x <- matrix(data = c(1,2,3,4), nrow = 2, ncol = 2)
> x
      [,1] [,2]
[1,]    1    3
[2,]    2    4
> x <- matrix(c(1,2,3,4), 2, 2)
> matrix(c(1,2,3,4), 2, 2, byrow = TRUE)
      [,1] [,2]
[1,]    1    2
[2,]    3    4
> sqrt(x)
      [,1] [,2]
[1,] 1.000000 1.732051
[2,] 1.414214 2.000000
> x^2
      [,1] [,2]
[1,]    1    9
[2,]    4   16
> |
```

Environment History Connections

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15:6	(Top Level)	R Script
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Lab1.R x Untitled1* x

```
1 ## Graphics
2
3 x <- rnorm(50)
4 y <- x + rnorm(50, mean = 50, sd = .1)
5
6 plot(x, y)
7 plot(x, y, xlab = "this is the x-axis",
8      ylab = "this is the y-axis",
9      main = "Plot of X vs Y")
10 pdf("Figure.pdf")
11 plot(x, y, col = "green")
12 dev.off()
13
14 ?seq
15 x <- 1:10
16 x
17 x <- seq(1, 10)
18 x
```

18:2 (Top Level) R Script

Environment History Connections

Console Terminal x Jobs x

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```
>
> 2
>
> ?seq
> x <- 1:10
> x
[1] 1 2 3 4 5 6 7 8 9 10
> x <- seq(1, 10)
> x
[1] 1 2 3 4 5 6 7 8 9 10
> |
```

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Plot of X vs Y

this is the y-axis

this is the x-axis

Console Terminal × Jobs ×

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```
[4,]      4      8     12     16
> A[2,3]
[1] 10
> A[c(1,3),c(2,4)]
      [,1] [,2]
[1,]     5    13
[2,]     7    15
> A[1:3,2:4]
      [,1] [,2] [,3]
[1,]     5     9    13
[2,]     6    10    14
[3,]     7    11    15
> A[1:2,]
```

```
> A
      [,1] [,2] [,3] [,4]
[1,]     1     5     9    13
[2,]     2     6    10    14
> A[,1:2]
      [,1] [,2]
[1,]     1     5
[2,]     2     6
[3,]     3     7
[4,]     4     8
> A[1,]
[1]  1  5  9 13
> A[-c(1,3),]
      [,1] [,2] [,3] [,4]
[1,]     2     6    10    14
[2,]     4     8    12    16
> A[-c(1,3),-c(1,3,4)]
[1]  6  8
> dim(A)
[1]  4  4
> |
```

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RStudio

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Lab1.R x Untitled1* x

Source on Save Run Source

```
3 x <- seq(-pi, pi,length = 50)
4 y <- x
5 f <- outer(x, y, function(x,y) cos(y)/(1+x^2))
6 contour(x,y,f)
7 contour(x,y,f,nlevels=45,add=T)
8 fa <- (f-t(f))/2
9 contour(x,y,fa,nlevels=15)
10 image(x,y,fa)
11 persp(x,y,fa)
12 persp(x,y,fa,theta=30)
13 persp(x,y,fa,theta=30,phi=20)
14 persp(x,y,fa,theta=30,phi=70)
15 persp(x,y,fa,theta=30,phi=40)
16
17
18 plot(cylinders, mpg)
19 plot(Auto$cylinders, Auto$mpg)
20 attach(Auto)
21 plot(cylinders, mpg)
22 cylinders <- as.factor(cylinders)
23 plot(cylinders, mpg)
24 plot(cylinders, mpg, col="red")
25 plot(cylinders, mpg, col="red", varwidth=T)
26 plot(cylinders, mpg, col="red", varwidth=T, horizontal=T)
27 plot(cylinders, mpg, col="red", varwidth=T, xlab="cylinders", ylab="MPG")
28 hist(mpg)
29 hist(mpg,col=2)
30 hist(mpg,col=2,breaks=15)
31 pairs(Auto)
32 pairs(~ mpg + displacement + horsepower + weight + acceleration, Auto)
33 plot(horsepower,mpg)
34 summary(Auto)
35 summary(mpg)
```

35:13 (Top Level) R Script

Environment History Connections

Console Terminal x Jobs x

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```
1st Qu.:73.00 1st Qu.:1.000 ford pinto : 5
Median :76.00 Median :1.000 toyota corolla : 5
Mean :75.98 Mean :1.577 amc gremlin : 4
3rd Qu.:79.00 3rd Qu.:2.000 amc hornet : 4
Max. :82.00 Max. :3.000 chevrolet chevette: 4
(Other) :365

> summary(mpg)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
   9.00  17.00   22.75   23.45   29.00   46.60

> |
```

