

Exercise Lab 1

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#1

c=TRUE

c

as.integer(c)

Output: > #1

> c=TRUE

> c

[1] TRUE

> as.integer(c)

[1] 1

#2

string="\"Do you think this is a game?\", he said. \"No, I think Jengas a game\". Archer responded.'

Output: string='\"Do you think this is a game?\", he said. \"No, I think Jeng as a game\". Archer responded.'

> string

[1] "\"Do you think this is a game?\", he said. \"No, I think Jengas a game\". Archer responded.'

#3

p=4L

q=8L

class(p)

class(q)

Output: > p=4L

> q=8L

> class(p)

[1] "integer"

> class(q)

[1] "integer"

#4

tot=p+q

tot

diff=q-p

diff

prod=p*q

prod

quot=q/p

quot

Output: > tot=p+q

> tot

[1] 12

> diff=q-p

> diff

[1] 4

> prod=p*q

> prod

[1] 32

> quot=q/p

> quot

[1] 2

#5

root=sqrt(p)

root

log2(root)

Output: > root=sqrt(p)

> root

[1] 2

> log2(root)

[1] 1

#6

log=log10(100)

cos(pi)*log

Output: > log=log10(100)

> cos(pi)*log

[1] -2

#7

x=-2:2

x

Output: > x=-2:2

> x

[1] -2 -1 0 1 2

#8

```
y=c(1:10)
```

```
y
```

```
dim(y)
```

```
length(y)
```

Output:

```
> y=c(1:10)
> y
 [1]  1  2  3  4  5  6  7  8  9 10
> dim(y)
NULL
> length(y)
 [1] 10
```

#9

```
small=c("a", "b", "c", "d", "e")
```

```
caps=c("Z", "Y", "X", "W", "V")
```

```
rbind(small,caps)
```

```
cbind(small,caps)
```

Output:

```
> small=c("a", "b", "c", "d", "e")
```

```
> caps=c("Z", "Y", "X", "W", "V")
```

```
> rbind(small,caps)
```

```
small [,1] [,2] [,3] [,4] [,5]
```

```
caps  "Z"  "Y"  "X"  "W"  "V"
```

```
> cbind(small,caps)
```

```
small caps
```

```
[1,] "a" "Z"
```

```
[2,] "b" "Y"
```

```
[3,] "c" "X"
```

```
[4,] "d" "W"
```

```
[5,] "e" "V"
```

#10

```
M=c(1,-2,5,4,8,-1,3,6,7)
```

```
dim(M)<-c(3,3)
```

```
M
```

```
mul=M%%M%%M%%M
```

```
mul
```

Output:

```
> M=c(1,-2,5,4,8,-1,3,6,7)
```

```
> dim(M)<-c(3,3)
```

```
> M
```

```
 [,1] [,2] [,3]
```

```
[1,]  1  4  3
```

```
[2,] -2  8  6
```

```
[3,]  5 -1  7
```

```
> mul=M%%M%%M%%M
```

```
> mul
```

| | [,1] | [,2] | [,3] |
|------|------|------|------|
| [1,] | 182 | 248 | 558 |
| [2,] | 332 | 364 | 924 |
| [3,] | 322 | 150 | 562 |

#11

```
elementwise=M*M
```

```
elementwise
```

```
Output: > elementwise=M*M
```

```
> elementwise
```

| | [,1] | [,2] | [,3] |
|------|------|------|------|
| [1,] | 1 | 16 | 9 |
| [2,] | 4 | 64 | 36 |
| [3,] | 25 | 1 | 49 |

#12

```
transpose=t(M)
```

```
transpose
```

```
inverse=solve(M)
```

```
inverse
```

```
determinant=det(M)
```

```
determinant
```

```
Output: > transpose=t(M)
```

```
> transpose
```

| | [,1] | [,2] | [,3] |
|------|------|------|------|
| [1,] | 1 | -2 | 5 |
| [2,] | 4 | 8 | -1 |
| [3,] | 3 | 6 | 7 |

```
> inverse=solve(M)
```

```
> inverse
```

| | [,1] | [,2] | [,3] |
|------|------------|-------------|---------------|
| [1,] | 0.50000000 | -0.25000000 | 5.551115e-17 |
| [2,] | 0.3548387 | -0.06451613 | -9.677419e-02 |
| [3,] | -0.3064516 | 0.16935484 | 1.290323e-01 |

```
> determinant=det(M)
```

```
> determinant
```

```
[1] 124
```