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**FDA LAB ASSIGNMENT 1-**

**Entering Input:**

```
> x <- 1
> print(x)
[1] 1
> |
```

```
> x
[1] 1
> |
```

```
> msg <- "hello"
> msg
[1] "hello"
> |
```

---

**Evaluation:**

```
> x <- 5
> x
[1] 5
> |
```

```
> x <- 5
> print(x)
[1] 5
> |
```

```
> x <- 10:30
> x
[1] 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
> |
```

### Creating Vectors:

```
> x <- c(0.5, 0.6)
> x
[1] 0.5 0.6
> |
```

```
> x <- c(TRUE, FALSE)
> x
[1] TRUE FALSE
> |
```

```
> x <- c(T, F)
> x
[1] TRUE FALSE
> |
```

```
> x <- c("a", "b", "c")
> x
[1] "a" "b" "c"
> |
```

```
> x <- 9:29
> x
[1] 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
> |
```

```
> x <- c(1+0i, 2+4i)
> x
[1] 1+0i 2+4i
> |
```

```
> x <- vector("numeric", length = 10)
> x
[1] 0 0 0 0 0 0 0 0 0 0
> |
```

### Mixing Objects:

```
> y <- c(1.7, "a")
> y
[1] "1.7" "a"
> |
```

```
> y <- c(TRUE, 2)
> y
[1] 1 2
> |
```

```
> y <- c("a", TRUE)
> y
[1] "a" "TRUE"
> |
```

### Explicit Coercion:

```
> x <- 0:6
> class(x)
[1] "integer"
> as.numeric(x)
[1] 0 1 2 3 4 5 6
> as.logical(x)
[1] FALSE TRUE TRUE TRUE TRUE TRUE
> as.character(x)
[1] "0" "1" "2" "3" "4" "5" "6"
> |
```

```

> x <- c("a", "b", "c")
> as.numeric(x)
[1] NA NA NA
Warning message:
NAs introduced by coercion
> as.logical(x)
[1] NA NA NA
> as.complex(x)
[1] NA NA NA
Warning message:
NAs introduced by coercion
> |

```

### Matrices:

```

> m <- matrix(nrow = 2, ncol = 3)
> m
      [,1] [,2] [,3]
[1,]    NA    NA    NA
[2,]    NA    NA    NA
> dim(m)
[1] 2 3
> attributes(m)
$dim
[1] 2 3

```

```

> m <- matrix(1:6, nrow = 2, ncol = 3)
> m
      [,1] [,2] [,3]
[1,]     1     3     5
[2,]     2     4     6
> |

```

```

> m <- 1:10
> m
[1] 1 2 3 4 5 6 7 8 9 10
>
> dim(m) <- c(2, 5)
> m
      [,1] [,2] [,3] [,4] [,5]
[1,] 1    3    5    7    9
[2,] 2    4    6    8   10
> |

```

```

> x <- 1:3
> y <- 10:12
> cbind(x, y)
      x y
[1,] 1 10
[2,] 2 11
[3,] 3 12
> rbind(x, y)
      [,1] [,2] [,3]
x      1    2    3
y     10   11   12
> |

```

### Lists:

```

> x <- list(1, "a", TRUE, 1 + 4i)
> x
[[1]]
[1] 1

[[2]]
[1] "a"

[[3]]
[1] TRUE

[[4]]
[1] 1+4i

```

### Empty List:

```
> x <- vector("list", length = 5)
> x
[[1]]
NULL

[[2]]
NULL

[[3]]
NULL

[[4]]
NULL

[[5]]
NULL
```

### Factors:

```
> x <- factor(c("yes", "yes", "no", "yes", "no"))
> x
[1] yes yes no  yes no
Levels: no yes
> |

> table(x)
x
no yes
 2  3
> x
[1] yes yes no  yes no
Levels: no yes
> |

> unclass(x)
[1] 2 2 1 2 1
attr(,"levels")
[1] "no" "yes"
> |
```

```

> x <- factor(c("yes", "yes", "no", "yes", "no"))
> x
[1] yes yes no  yes no
Levels: no yes
> |

> x <- factor(c("yes", "yes", "no", "yes", "no"),
+             levels = c("yes", "no"))
> x
[1] yes yes no  yes no
Levels: yes no
> |

```

### Missing Values:

```

> x <- c(1, 2, NA, 10, 3)
> is.na(x)
[1] FALSE FALSE  TRUE FALSE FALSE
> is.nan(x)
[1] FALSE FALSE FALSE FALSE FALSE
> x <- c(1, 2, NaN, NA, 4)
> is.na(x)
[1] FALSE FALSE  TRUE  TRUE FALSE
> is.nan(x)
[1] FALSE FALSE  TRUE FALSE FALSE
> |

```

### Data frames:

```

> x <- data.frame(foo = 1:4, bar = c(T, T, F, F))
> x
  foo  bar
1   1 TRUE
2   2 TRUE
3   3 FALSE
4   4 FALSE
> nrow(x)
[1] 4
> ncol(x)
[1] 2
> |

```

## Names:

```
> x <- 1:3
```

```
> names(x)
```

```
NULL
```

```
> |
```

```
> names(x) <- c("New York", "Seattle", "Los Angeles")
```

```
> x
```

```
  New York      Seattle Los Angeles
        1          2          3
```

```
> |
```

```
> names(x) <- c("New York", "Seattle", "Los Angeles")
```

```
> names(x)
```

```
[1] "New York"      "Seattle"        "Los Angeles"
```

```
> |
```

```
> x <- list("Los Angeles" = 1, Boston = 2, London = 3)
```

```
> x
```

```
$`Los Angeles`
```

```
[1] 1
```

```
$Boston
```

```
[1] 2
```

```
$London
```

```
[1] 3
```

```
> |
```

```
> x <- list("Los Angeles" = 1, Boston = 2, London = 3)
```

```
> names(x)
```

```
[1] "Los Angeles" "Boston"       "London"
```

```
> |
```

---



```

> m <- matrix(1:4, nrow = 2, ncol = 2)
> dimnames(m) <- list(c("a", "b"), c("c", "d"))
> m
  c d
a 1 3
b 2 4
> |

> colnames(m) <- c("h", "f")
> rownames(m) <- c("x", "z")
> m
  h f
x 1 3
z 2 4
> |

```

### Summary:

There are a variety of different built in-data types in R. In this chapter we have reviewed the following

- atomic classes: numeric, logical, character, integer, complex
- vectors, lists
- factors
- missing values
- data frames and matrices

-----X-----

Thank you!