Data Visualization

PS239T

Fall 2016

Atomic Types

Type	Example
numeric	3
integer	3L
character	"3"
logical	TRUE

Data Structures

Dimension	Homogeneous	Heterogeneous
1d	Atomic vector	List
2d	Matrix	Data frame
nd	Array	

Types of Vectors

- character
- numeric
- logical

Making stuff

```
# make a vector
my.vector = c(thing1, thing1, thing1)

# add item to vector
my.vector = c(my.vector, new.item)

# make list
my.list = list(thing1, thing2, thing3)

# make matrix
my.matrix = matrix(vector, nrow = X, ncol = X)
```

Testing and Coercion

```r
# helpful inspection functions
class(obj) # returns class
str(obj) # returns sructure
length(obj) # returns lengh

# coercing atomic vectors
as.character(obj)
as.logical(obj)
as.numeric(obj)

# in general
as.thing(obj)
```

Attributes and Names

- metadata that describes data

```
names(obj)
names(obj) < c("name1", "name2", "name3")
```

Factors

- categorical data
- ordered or unordered

```
# basic call for unordered factor
my.factor <- factor(a.vector, levels = c("level1", "level2"

# basic call for ordered factor
my.ordered <- ordered(a.vector, levels = c("level1","level2

# coerce something into a factor.
# basically an abreviated version of the `factor` function
as.factor(a.vector)

# coerce something back into a character (or whatever) vec
as.character(my.factor)
```