

# OBJECTS IN R

Andrew Robinson

Department of Mathematics & Statistics  
University of Melbourne

February 15, 2006

# OUTLINE

- 1 OBJECT
- 2 WHAT IS AN OBJECT?
  - Why use Objects?
  - Why avoid Objects?
- 3 OBJECT TYPES
- 4 OPERATIONS
  - Size-preserving
  - Size-increasing
  - Size-reducing
  - Size-altering
- 5 YOUR DATA

# CHARACTERISTICS

# CHARACTERISTICS

- Everything.

# CHARACTERISTICS

- Everything.
- Objects are realizations of a class.
- All objects have attributes.

# SIMPLICITY

Using objects simplifies many complicated problems.

- 1 Communication.
- 2 Comparison.
- 3 Coercion.

# MEMORY

You have to put them somewhere.

# BASIC

- Numeric.
- String.
- Factor.
- Integer.
- Logical.



# CONTAINERS

- Vector.
- Matrix.
- Array.
- Dataframe.
- List.

# CREATION AND ASSIGNMENT

<-

# CREATION AND ASSIGNMENT

<-

## EXAMPLES

- `my.new.object <- c(1:10)`
- `my.dear.friends <- c("Val", "Peter")`

# ARITHMETIC

## EXAMPLES

- `num.1 <- 1`
- `num.2 <- 2)`
- `num.3 <- num.1 / num.2`

# ARITHMETIC

## EXAMPLES

- `num.1 <- 1`
- `num.2 <- 2)`
- `num.3 <- num.1 / num.2`

Arithmetic is **vectorized**. This is an example of **coercion**.

## EXAMPLES

- `num.1 <- c(1:10)`
- `num.2 <- c(1:10)`
- `num.3 <- num.1 / num.2`

# COMBINATIONS

Objects can be combined or concatenated in various ways.

# COMBINATIONS

Objects can be combined or concatenated in various ways.

## RELEVANT COMMANDS

- `cbind()`
- `rbind()`

# COMBINATIONS

Objects can be combined or concatenated in various ways.

## RELEVANT COMMANDS

- `cbind()`
- `rbind()`
- `merge()`



# SUBSETTING

[ ]

# SUBSETTING

[ ]

## EXAMPLES

- `my.object <- c("A", "B", "C")`
- `my.object[2]`
- `my.object[2:3]`
- `my.object[-1]`

# RESHAPING OBJECTS

Sometimes objects are in the wrong shape.

# RESHAPING OBJECTS

Sometimes objects are in the wrong shape.

## RELEVANT FUNCTION

- `reshape()`

# YOUR DATA ARE ALSO AN OBJECT

R reads data from outside into objects, and writes objects to files .

## YOUR DATA ARE ALSO AN OBJECT

R reads data from outside into objects, and writes objects to files .

### RELEVANT FUNCTION

- `read.csv()`
- `write.csv()`