R Programming

The language of Data Science

Importance

- Free & open source.
- Vector Operations.
- Great Community.
- 9000+ packages.

Installing R.

- Home page of The R project for Statistical Computing
- r-project.org
- Rstudio is lot easier and lot more organised.
- Install using the website of Rstudio rstudio.com.

- Use control +enter to run the commands.

- Use cat("\014") command to clear the console or ctrl+L
- Use dev.off() to clear plots

Packages

- Packages are bundles of code that add new functions to R. give more power to R.

- There are two kinds(general categories) of packages

Base.
Installed with R but not loaded by default

Contributed.
More significant than that ar the third party packages.
Need to be downloaded, installed & loaded separately.

Where to get these packages??

- CRAN (comprehensive R archieve network) official R site which has packages listed with the official documentation.

- Crantastic! (this website lists the packages and when u click on it, it will redirect you to CRAN.

- GitHub.

- For CRAN go to cran.r-project.org, Go to tasks view.

Topics covered today

- Variables
- Data types
- Operators
- Conditional Statements
- Loops
- Strings
- functions

Variables

- Variablesare nothing but reserved memory locations to store values.
- This means when you create a variable you reserve some space in memory.
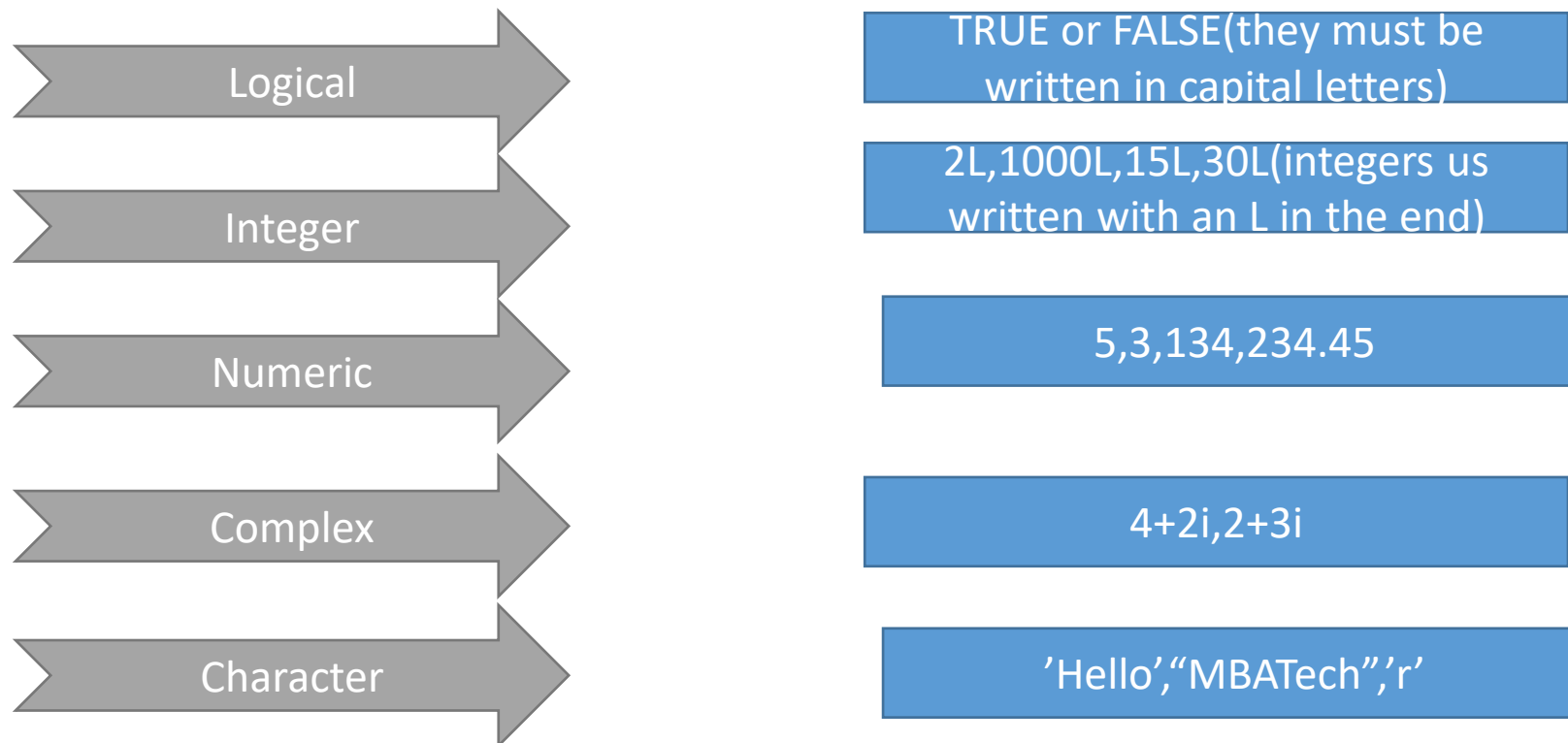- Command:
- X=15
- y<- 12
- Z="Hello"

Data Types

- A data type in programming is a classification that specifies which type of value a variable has what type of mathematical, relational or logical operations can be applied to it without causing an error.

- Data type helps to classify the value stored in a variable.

- For eg: numeric value , we can apply various arithmetic operations but you cannot apply this operation to character value.

Data types

1. Vector
2. Matrix
3. Array
4. List
5. Data frames

Vector

- Vector is a sequence of data elements of the same basic type.
- There are 5 classes of vectors

Class	Example
Logical	TRUE or FALSE(they must be written in capital letters)
Integer	2L,1000L,15L,30L(integers us written with an L in the end)
Numeric	5,3,134,234.45
Complex	4+2i,2+3i
Character	'Hello',"MBATech",'r'

Matrix

- Matrix are R objects in which the elements are arranged in a two dimensional rectangular layout
- Syntax: matrix(data,nrow,ncol,byrow,dimnames)
- Data – is the input vector which becomes the data elements of the matrix.
- Nrow- is the number of rows to be created.
- Ncol- is the number of columns to be created.
- Byrow- is a logical value, if TRUE then the input vector elements is aarranged by rows.
- Dimnames- is the names assigned to the rows and columns

Array

- Arrays are R data objects which can store data in more than two dimensions.

- Syntax: array(data,dim,dimnames)

List

- Lists are the R objects which contain elements of different types like numbers,strings,vectors and another list inside it without actually changing there data type unlike vectors.

- Syntax: list(data)