

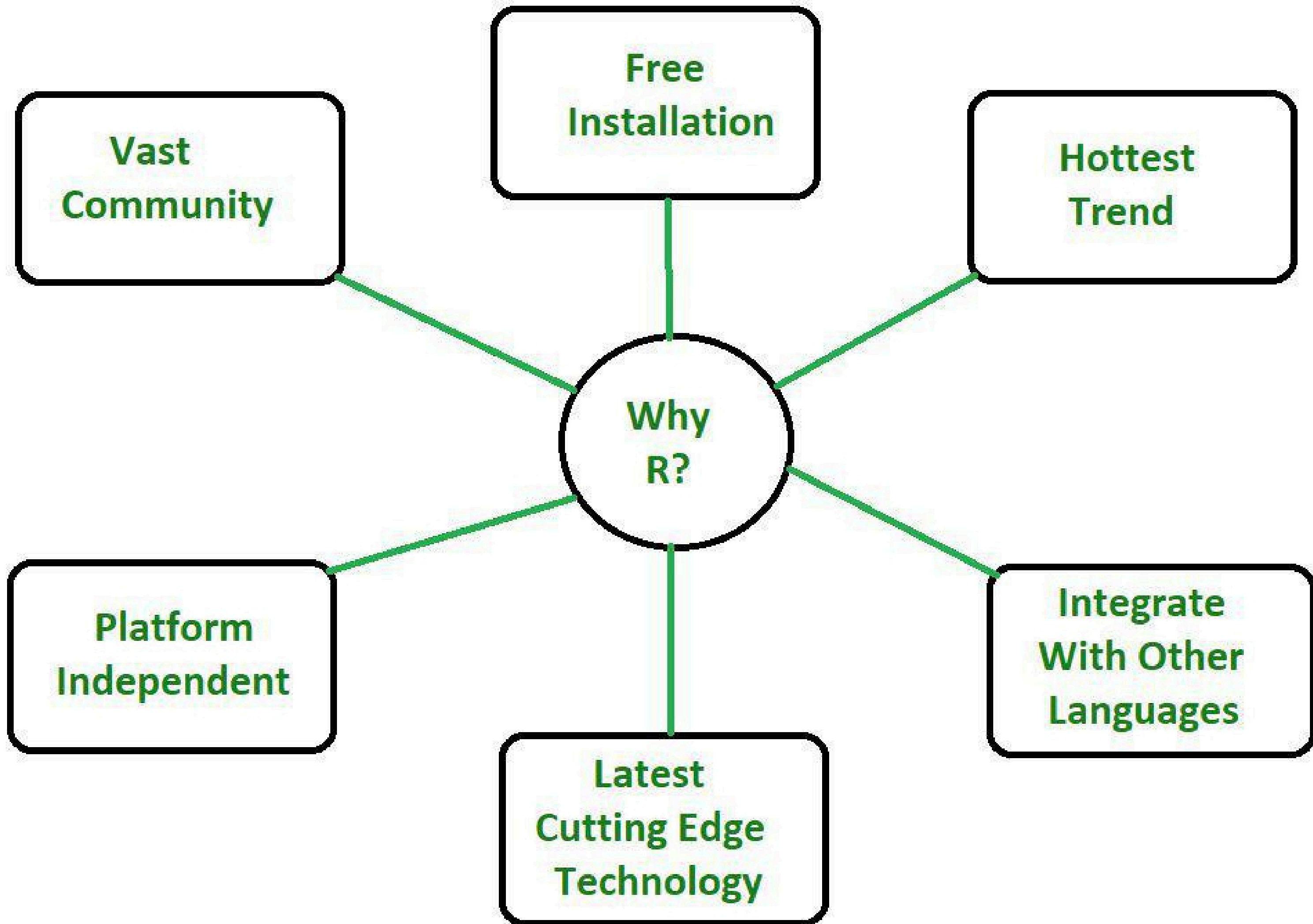
R programming

BASICS

Presented by: LEVIS KITONGE

Introduction

- It is a great resource for data analysis, data visualization, data science and machine learning
- It provides many statistical techniques (such as statistical tests, classification, clustering and data reduction)
- It is easy to draw graphs in R, like pie charts, histograms, box plot, scatter plot, etc++
- It works on different platforms (Windows, Mac, Linux)
- It is open-source and free
- It has a large community support
- It has many packages (libraries of functions) that can be used to solve different problems



R studio interface

The screenshot shows the R Studio interface with three panels highlighted by blue rounded rectangles:

- Console:** Displays the R version (3.4.0), copyright information, platform (x86_64-w64-mingw32/x64), and instructions for using R, including how to get help and quit.
- Environment/History:** Shows the current environment (Global Environment) and a search bar. The environment is currently empty.
- Files/Plots/Packages/Help:** Shows a file explorer view with a table of files and folders.

Console

```
R version 3.4.0 (2017-04-21) -- "You Stupid Darkness"
Copyright (C) 2017 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
you are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help,
or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

> |
```

Environment/History

Environment is empty

Files/Plots/Packages/Help

	Name	Size	Modified
<input type="checkbox"/>	(Heat and Mass Transfer) Prof. Dipl.-...	5.8 MB	May 17, 2016, 10:40 AM
<input type="checkbox"/>	(Oxford Applied Mathematics and C...	2.9 MB	Jul 21, 2016, 2:32 PM
<input type="checkbox"/>	.Rhistory	439 B	May 29, 2017, 3:47 PM
<input type="checkbox"/>	0513.pdf	82.1 KB	Jun 24, 2016, 10:48 AM
<input type="checkbox"/>	Book1.xlsx	14 KB	Jun 21, 2016, 11:10 AM

R studio interface

Scripts

Environment/History

Files/plots/packages/Help

Console

```
R version 3.4.0 (2017-04-21) -- "You Stupid Darkness"  
Copyright (C) 2017 The R Foundation for Statistical Computing  
Platform: x86_64-w64-mingw32/x64 (64-bit)
```

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'help.start()' for an HTML browser interface to help.  
Type 'q()' to quit R.
```

Console

Environment

History

Import Dataset

Global Environment

Environment is empty

Files

Plots

Packages

Help

Viewer

New Folder Delete Rename More

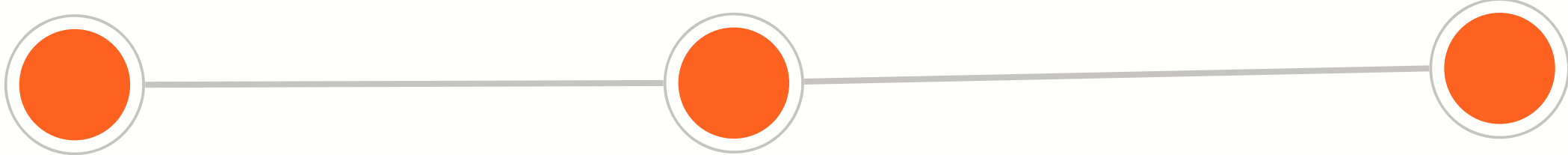
Home

	Name	Size	Modified
<input type="checkbox"/>	(Heat and Mass Transfer) Prof. Dipl.-Ing. Dr. Hans-J...	5.8 MB	May 17, 2016, 10:40 AM
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<input type="checkbox"/>	Book1.xlsx	14 KB	Jun 21, 2016, 11:10 AM
<input type="checkbox"/>	BOOK6.pdf	5.3 MB	Jul 21, 2016, 2:57 PM
<input type="checkbox"/>	Criterion Games		

Reserved words in R

if	else	while	repeat	for
function	in	next	break	TRUE
FALSE	NULL	Inf Body	NaN	NA
NA_integer_	NA_real_	NA_complex_	NA_character_	...

data types



We can use the `class()` function to check the data type of a variable

- numeric - (10.5, 55, 787)
- integer - (1L, 55L, 100L, where the letter "L" declares this as an integer)

complex - (9 + 3i, where "i" is the imaginary part)

- character (a.k.a. string) - ("k", "R is exciting", "FALSE", "11.5")
- logical (a.k.a. boolean) - (TRUE or FALSE)

Type Conversion

You can convert from one type to another with the following functions:

- `as.numeric()`
- `as.integer()`
- `as.complex()`

Other escape characters in R:

Code

Result

\\

Backslash

\n

New Line

\r

Carriage Return

\t

Tab

\b

Backspace

Operators

Operators are used to perform operations on variables and values.

Types of operators include:

- Arithmetic operators
- Logical operators
- Assignment operators
- Miscellaneous operators



Thank you

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