AN INTRODUCTION TO R

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R is a programming language that has been optimized for data analysis and modeling.
Characteristics

- R is a programming language that has been optimized for data analysis and modeling.
- R can be used as an object-oriented programming language, or as a statistical environment within which sets of instructions can be performed automatically.
Utility

1. R runs on Windows, Mac-OS, and Unix variants;
2. R provides a vast number of useful statistical tools;
   - many of which have been painstakingly tested;
3. R produces publication-quality graphics in a variety of formats;
4. R plays well with LaTeX via the Sweave package;
5. R plays well with FORTRAN, C, and shell scripts;
6. R scales, making it useful for small and large projects;
7. R is object-oriented;
8. R eschews the GUI.
**FRUSTRATION**

1. R cannot do everything;
2. R will not hold your hand;
3. The documentation can be opaque;
4. R can drive you crazy, or age you prematurely;
5. The contributed packages have been exposed to varying degrees of testing and analysis;
6. R stores objects in RAM;
7. R eschews the GUI.
A contrast

1. R is object-oriented;
2. SAS is PROCedure-oriented;
Talking with R

- Interactively.
  - Write commands at prompt.
  - Use arrows for history.
Talking with R

- Interactivley.
  - Write commands at prompt.
  - Use arrows for history.

- Batch
  - Write scripts.
  - Use `source()`
The working directory is the default directory.
The **working directory** is the default directory.

### Relevant Commands

- `getwd()`
- `setwd()`
The **workspace** is the container of all your objects.
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**RELEVANT COMMANDS**

- `ls()`
The **workspace** is the container of all your objects.

**RELEVANT COMMANDS**

- `ls()`
- `rm()`
- `rm(list=ls())`
The **workspace** is the container of all your objects.

**RELEVANT COMMANDS**

- `ls()`
- `rm()`
- `rm(list=ls())`
- `save.image()`
- `save()`
- `load()`
Local Help

R comes with internal help. Use the examples.
Local Help

R comes with internal help. Use the examples.

Relevant Commands

- `help()`
- `?<command>`
R comes with internal help. **Use the examples.**

**RELEVANT COMMANDS**

- `help()`
- `?<command>`
- `help.search()`
- `help.start()`
The Internet is a vast repository of advice. Most of it is good.
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**RELEVANT COMMANDS**

- RSiteSearch()
- Google
  - R-help ...
Responsive Help

A list-server exists. Information is available at:
https://stat.ethz.ch/mailman/listinfo/r-help
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**RELEVANT ISSUES**

- Post questions as a last resort.
- [http://www.r-project.org/posting-guide.html](http://www.r-project.org/posting-guide.html)
R is hard work

Work hard!
R is hard work

Work hard!

That means:

- Read widely.
- Use the resources available.
- Experiment patiently and flexibly.
- Keep scripts.
- Comment generously.