Implemention of an R Environments

Liam O'Suilleabhair

YHAT

Introduction

Profile

Application

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February 04, 2019

Motivation

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Introduction

Environmen

Profile

Applicatio

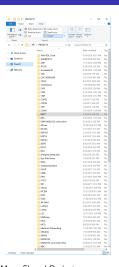
Reproducibility necessitates a **Standard Environment**

A Project has 3 sets of information

- 1 Resources
- 2 Operations

A Functional Program maps data to output

3 Results



Many Shared Projects Many Project Structures

Outline

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Introduction

Environmer

Profile

?Startup

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Environment

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Applicatio

Description:

In R, the startup mechanism is as follows.

Unless '-no-environ' was given on the command line, R searches for site and user files to process for setting environment variables. The name of the site file is the one pointed to by the environment variable ranked in a 'factory-fresh' installation). The name of the user file can be specified by the 'R_ENVIRON_USER' environment variable; if this is unset, the files searched for are '.Renviron' in the current or in the user's home directory (in that order). See 'Detailsr' for how the files are read.

Then R searches for the site-wide startup profile file of R code unless the command line option '-no-site-file' was given. The path of this file is taken from the value of the 'R_PROFILE' environment variable (after tilde expansion). If this variable is unset, the default is 'R_HOME/etc/Rprofile.site', which is used if it exists (which it does not in a 'factory-fresh' installation). This code is sourced into the 'base'package. Users need to be careful not to unintentionally overwrite objects in 'base', and it is normally advisable to use 'local' if code needs to be executed: see the examples.

Then, unless '-no-init-file' was given, R searches for a user profile, a file of R code. The path of this file can be specified by the 'R_PROFILE_USER' environment variable (and tilde expansion will be performed). If this is unset, a file called '.Rprofile' is searched for in the current directory or in the user's home directory (in that order). The user profile file is sourced into the workspace.

An R Environment

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Introduction

Environment

Profile

A 12

1. R_ENVIRON

Global Environment

2. R_ENVIRON_USER

User Environment

3. R_PROFILE

Group Profile

4. R_PROFILE_USER

User Profile

One R Environment

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Introduction

Environment

Profile



Platform	Development	Notebooks	Datasets	
Machine	DOR Desktop	KPIT Server	DOR Server	
Processor	2.5GHz 4 Core	2.3GHz 8 Core	3.0GHz 32 Core	
Memory	16GB	64GB	256GB	
Storage	Unlimited	1TB	1TB	
Support	DOR IT	KPIT	DOR IT	

Example: Set Environment Variable

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Example \sim /.Renviron on Unix

 $R_LIBS="\sim/R/library"$

Example .Renviron on Windows

R_LIBS="C:/R/library"

R_ENVIRON - Global Environment (Optional)

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\$(R RHOME)/etc/Renviron.site

Create a .Renviron file - \sim /.Renviron

Set R_ENVIRON_USER

R_ENVIRON_USER - User Environment

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 \sim /. Renviron

Create a group profile - GROUP_HOME/Rprofile.site

Set R_PROFILE

Create a shared library directory - GROUP_HOME/R_LIBS

Set R_LIBS_SITE

Create a personal library directory - \sim /R_LIBS

Set R LIBS USER



R_PROFILE - Group Profile

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Profile

Application

GROUP_HOME/Rprofile.site

Create .Rprofile - \sim /.Rprofile

Set R_PROFILE_USER

Create Project .Rprofiles e.g. \sim /YHAT/.Rprofile.YHAT

Create Function to source Project Environments

```
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```

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Profile

```
> Renv <- function(x){
+ switch(x,
+ YHAT = source(".Rprofile.YHAT"))
+ }
> Renv('YHAT')
>
```

R_PROFILE_USER - User Profile

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Application

 \sim /. Rprofile

Create Development Directory e.g. \sim /Development/
Set Development Directory

Create Password Vault \sim /pwv.txt Load Passwords

A Project Profile

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Profile

Application

 ${\sf GROUP_HOME/PROJECT/.Rprofile.}{<} {\sf PROJECT_NAME}{>}$

Create Resource Directory Create Code Directory Create Analysis Directory

Load Libraries
Set Project Options
Load Project Resources
Set Database Connections

Content Management

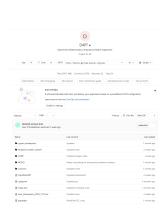
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→ This PC → x225867 (\pdorgsub.kaiser.org) (O:) → rsch → sri → projects → D4PT → DATA					
Name	Date modified	Type	Size		
ablaps_master_cohort1	1/16/2019 3:25 PM	File	5,198 KB		
ablaps_master_cohort1	1/16/2019 3:44 PM	FF File	1 K/B		
advance_illness	1/17/2019 9:14 AM	FF File	1 108		
allbad_mm	1/17/2019 9:13 AM	FF File	1 108		
analysis3_master_cohort1	1/16/2019 3:25 PM	File	51,958 K/B		
analysis3_master_cohort1	1/17/2019 11:33 AM	Microsoft Excel C	2,955,727 KB		
analysis3der_master_cohort1	1/17/2019 12:50 PM	Microsoft Excel C	311,744 KB		
analysis3win_master_cohort1	1/16/2019 4:41 PM	FF File	54,217 KB		
bad_mm ba	1/17/2019 9:13 AM	FF File	1 108		
bmi_master_cohort1	1/16/2019 3:25 PM	File	25,177 108		
bmi_master_cohort1	1/16/2019 3:45 PM	FF File	1 K/S		
cops2_master_cohort1	1/16/2019 3:58 PM	File	11,037 KB		
cops2_master_cohort1	1/16/2019 4:07 PM	FF File	1 108		
CORR_MRN_PLS_NB	1/17/2019 9:13 AM	FF File	1 108		
cost_master_cohort1	1/4/2019 4:32 PM	File	9,053 KB		
■ D4PT	1/17/2019 9:22 AM	FF File	65,061 KB		
D4PTGP_COHORT1	1/16/2019 3:35 PM	File	28,241 KB		
data_use	1/17/2019 9:13 AM	FF File	1 KB		
death_post	1/17/2019 9:13 AM	FF File	1 108		
dxcg_master_cohort1	1/16/2019 3:25 PM	File	46,631 K/B		
dxcg_master_cohort1	1/16/2019 3:46 PM	FF File	1 KB		
gp_post	1/17/2019 9:13 AM	FF File	1 KB		
gp_pre	1/17/2019 9:13 AM	FF File	1 K/B		
hga1c_master_cohort1	1/16/2019 3:25 PM 1/16/2019 3:47 PM	File Ef File	6,553 KB		
fig. hga1c_master_cohort1	1/16/2019 3:47 PM 1/16/2019 3:25 PM	File File	1 K/B 18.865 K/B		
huti[master_cohort]	1/16/2019 3:25 PM 1/16/2019 3:50 PM	FE File	18,865 KB 10,844 KB		
huti_master_cohort1	1/16/2019 3:30 PM	File	10,844 KB 19,710 KB		
master_mrn_conort1	1/10/2019 3:31 PM 1/17/2019 9:14 AM	FE File	19,710 KB		
menicare mortality master cohort1	1/16/2019 9114 AM	File	12.294 KB		
mortainy_master_conort1	1/16/2019 3:25 PM	FE File	10.844 KB		
mrn lookup cohort1	1/16/2019 3:33 PM	File	20.847 KB		
mm_cocup_context	1/17/2019 9:14 AM	FE File	1 83		
nam_gp nam master cohort1	1/16/2019 3:14 AM	File	34.431.68		
nam_master_cohort1	1/17/2019 9:19 AM	FF File	10.844 KB		
phrreq_master_cohort1	1/16/2019 3:25 PM	File	912 KB		
phrreg_master_cohort1	1/16/2019 3:51 PM	FE File	1 KB		
rcc master_conort1	1/16/2019 3:31 PM	File	121,183 KB		
rcc_master_cohort1	1/16/2019 4:05 PM	FF File	1 103		
rutil_master_cohort1	1/16/2019 3:25 PM	File	35.863.03		
rutil_master_cohort1	1/16/2019 4:09 PM	FF File	10.844 KB		
ucda_master_cohort1	1/16/2019 3:25 PM	File	196,316 KB		
ucda master cohort1	1/16/2019 4:17 PM	FF File	10,844 KB		
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Project Workflow

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Option 1:

Reference Files and Operations Relative to project path e.g. source("./CODE/analysis/models.r")

Option 2:

Separate git controlled code from the project e.g. source(paste0(DATA, "analysis/models_output"))

Results

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Option 1 vs. Option 2

Option 1 is less verbose

Option 2 provides extra flexibility

Option 2 isolates code maintenance

Conclusions

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Only keep code that creates data or analysis

Management

Content

Structure

Maintain same format for Code and Analysis directories

Maintenance

Operations - Code

Output - Analysis

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Thanks:

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Application

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