Fundamentals of R Programming

HPRC Training

8 March 2024
Course Outline

1. Accessing Grace
2. Launching RStudio
3. Arithmetic Operators
4. Data Types and Variables
5. Built-in Functions
6. Vectors
7. Matrices
8. Data Frames
Accessing the HPRC Grace Portal

HPRC webpage: hprc.tamu.edu
Launching RStudio on Grace
Set number of hours to 8
Set number of cores to 1
Click “Launch” once the correct parameters have been selected
Click this button when it says “Connect to RStudio Server” (this will take a minute)
RStudio Interface

**Console**: Allows users to input R commands directly

**Terminal**: Allows shell access to the node

**Help**: Access help pages for functions and packages

**Packages**: Load and install packages

**Plots**: Displays user-generated graphs/figures

**File Browser**: Allows users to interact with file system
Accessing the Course Materials

- Open the terminal tab in the portal (Clusters > ACES_shell_acces) and run the following commands:

```
[user@grace1 ~]$ cp -r /scratch/training/FundamentalsOfR/ .
[user@grace1 ~]$ cd FundamentalsOfR/
[user@grace1 ~]$ ls
```

The output should read:

```
carnivores.csv  carnivores.xlsx  datascience.xlsx  FundamentalsOfR.Rmd
```
Accessing the Course Materials

● Next, in the upper left corner, select File > Open File
Accessing the Course Materials

- Navigate to the DataScienceR directory and select “IntroductionToDataScienceInR.Rmd”
Accessing the Course Materials

- Select “Run Document” from the toolbar to launch the workbook.
Accessing the Course Materials

- If you see a dialog box that says “Popup Blocked” click “Try Again”, and the workbook should open in a new tab.
Transition to Workbook

**R as a calculator**

In its simplest form, R can be used as a calculator (although it can do so much more!). Let’s get started in R by doing some basic arithmetic!

**Arithmetic Operators**

- Addition: +
- Subtraction: -
- Multiplication: *
- Division: /
- Exponentiation: ^
- Modulo: %%

Use the correct operators to complete the equations in the code chunks below.

**R Code**

```r
# Add 12 and 3
12 + 3
```

**R Code**

```r
# Subtract 7 from 11
11 - 7
```

**R Code**

```r
# Multiply 27 by 9
27 * 9
```
Need Help? Contact the HPRC Helpdesk

Website: hprc.tamu.edu
Email: help@hprc.tamu.edu
Phone: (979) 845-0219

Help us help you -- we need more info

- Which Cluster (ACES, FASTER, Terra, Grace)
- NetID (NOT your UIN)
- Job id(s) if any
- Location of your jobfile, input/output files
- Application used, if any
- Module(s) loaded, if any
- Error messages
- Steps you have taken, so we can reproduce the problem