**DS 710**

**R Programming Assignment**

**Homework 1:**  Share text file containing R code

For each of the following, copy **your R code and the output** (and your written response, for part 1.8) into a .r, .txt, .doc, .docx, or .rmd document.  Submit your finished document to GitHub.

1.0  Open R.  The first line of text in the console window tells you which version of R you are running (this should be version 3.1.2).  Copy this line of text into a document, to verify that you’ve installed the correct version.

R version 3.1.2 (2014-10-31) -- "Pumpkin Helmet"

1.1 Calculate the cube root of 2015, as follows:  
2015^(1/3)

> #1.1 Calculate the cube root of 2015, as follows:

> 2015^(1/3)

[1] 12.63063

>

1.2 Find the absolute value of 5.7 minus 6.8 divided by .58:  
abs(5.7-6.8)/.58

> #1.2 Find the absolute value of 5.7 minus 6.8 divided by .58:

> abs(5.7-6.8)/.58

[1] 1.896552

>

1.3 Create a list of integers from 1 to 12 and call it “a”:  
a = 1:12  
a   #(this will print a, so you can paste it into your homework; do this each time)

> #1.3 Create a list of integers from 1 to 12 and call it "a":

> a <- 1:12

> a

[1] 1 2 3 4 5 6 7 8 9 10 11 12

>

1.4 Create a sequence of odd numbers from 1 to 11:

b = c(1, 3, 5, 7, 9, 11)

b

> #1.4 Create a sequence of odd numbers from 1 to 11:

> b <- c(1, 3, 5, 7, 9, 11)

> b

[1] 1 3 5 7 9 11

>

1.5 Create the same sequence in another way:  
c = seq(1,11, 2)  
c

> #1.5 Create the same sequence in another way:

> c <- seq(1,11, 2)

> c

[1] 1 3 5 7 9 11

>

1.6 Take the natural log (ln) of a. (Note that this is done to the entire “vector” called a.)  
ln.a = log(a)  
ln.a

> #1.6 Take the natural log (ln) of a. (Note that this is done to the entire "vector" called a.)

> ln.a <- log(a)

> ln.a

[1] 0.0000000 0.6931472 1.0986123 1.3862944 1.6094379 1.7917595 1.9459101

[8] 2.0794415 2.1972246 2.3025851 2.3978953 2.4849066

>

1.7 Compute the squares of the odd numbers from 1 to 11.

> #1.7 Compute the squares of the odd numbers from 1 to 11.

> #Utilizes the sequence of odd numbers assigned to variable c from part 1.5

> d <- c ^ 2

> d

[1] 1 9 25 49 81 121

>

1.8 Use ?sd to view the help file for the sd function.  What does it do?

> #1.8 Use ?sd to view the help file for the sd function. What does it do?

> #This function computes the standard deviation of the values in x.

> #If na.rm is TRUE then missing values are removed before computation proceeds.

> ?sd

starting httpd help server ... done

>

1.9. Create a variable Name that contains your first name.  Because your name is a character string, not a number, you will need to put it in quotes so that R knows not to go looking for a variable with that name:

Name = "Susan"

Then type

paste("My name is", Name)

> #1.9. Create a variable Name that contains your first name.

> Name <- "Steve"

> paste("My name is", Name)

[1] "My name is Steve"

>

1.10 When you shut down R, R will ask if you want to save the workspace image.  Always choose **no**.

(Saving the workspace image means saving in memory any variables you have defined.  It does *not* save the code you wrote—you need to save your code in a .r file, or script, for this.  Saving your variables can be confusing:  If you later write another function that’s supposed to use, say, the name of a company, stored in the variable Name, but forget to initialize it, normally R would give you an error message that you could use to figure out your mistake.  But if you save the workspace image, then R won’t give an error message.  It will just use the stored value of Name—but that’s your name, not the company name.  This produces a bug that can be much harder to track down.)

|  |  |
| --- | --- |
| sd {stats} | R Documentation |

**Standard Deviation**

**Description**

This function computes the standard deviation of the values in x. If na.rm is TRUE then missing values are removed before computation proceeds.

**Usage**

sd(x, na.rm = FALSE)

**Arguments**

|  |  |
| --- | --- |
| x | a numeric vector or an **R** object which is coercible to one by as.vector(x, "numeric"). |
| na.rm | logical. Should missing values be removed? |

**Details**

Like [var](http://127.0.0.1:12588/library/stats/help/var) this uses denominator *n - 1*.

The standard deviation of a zero-length vector (after removal of NAs if na.rm = TRUE) is not defined and gives an error. The standard deviation of a length-one vector is NA.

**See Also**

[var](http://127.0.0.1:12588/library/stats/help/var) for its square, and [mad](http://127.0.0.1:12588/library/stats/help/mad), the most robust alternative.

**Examples**

sd(1:2) ^ 2

[Package *stats* version 3.1.2 [Index](http://127.0.0.1:12588/library/stats/html/00Index.html)]