R for Data Analysis

WOMEN IN DATA ACADEMY

TECH TALENT ACADEMY

Session Content

ARITHMETIC

COMPARISONS

TRUTH CONDITIONS

BRANCHING

LOOPS

MATRIX & DATAFRAMES

LIBRARIES & PLOTS

Arithmetic

Operator	Operation
+	Addition
-	Subtraction
*	Multiplication
/	Division
%/%	Integer Division
^	Exponentiation
%%	Modulus

```
num1 <- 10
num2<- 4

print ( paste("Addition:", Large + Small))
```

All operators return the result if written in this way

Try a calculation for each operator

Comparisons

Operator	Comparison
==	Equality
!=	Inequality
>	Greater than
>=	Greater than, or equal to
<	Less than
<=	Less than, or equal to

These have the same meanings as we are used to in other languages.

```
nil <- 0
num <-0
max <-1

print(paste ("0==0 Equality:", nil== num))
```

Truth Conditions

Much like other languages you can use the conditional statement **if**.

if (test-expression) { code-to-be-executed-when-true}

```
if ( 5>1)
{
print (“five is greater than one”)
print (“ test Succeeded”)
}
```

Branching Alternatives

We can use else with the if to provide alternative branches

```
if(test-expression)
{
        code-to-be-executed-when-true
} else
        {
        code-to-be executed-when-false
        }
```

Looping – While Loop

A while loop allows for a statement to be executed while a statement is true.

While (*test-expression)*

{

Statement-to-be-executed-on-each-iteration-updater

}

Loop – For Loop

for (*variable in sequence)*

{

Statements-to-be-executed-on-each-iteration

}

Try this :

seq <–c(100, 200, 200)

for (*variable in sequence)*

{

print(paste(“loop Variable=“, var))

}

You can use a for loop to repeat an event for a certain number of times

Breaking Loops

You can use the word **break** to terminate a loop when specified condition is met.

What is a matrix?

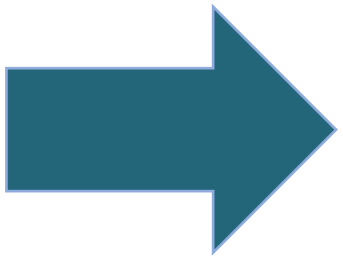
2x2 matrix	column 1	column 2
row 1	1	2
row 2	3	4

3x3 matrix	column 1	column 2	Column 3
row 1	1	2	3
row 2	4	5	6
row 3	7	8	9

5x2 matrix	column 1	column 2
row 1	1	2
row 2	3	4
row 3	5	6

Data frames

- Like matrix, data frames have a 2-dimensional table of rows and columns
- However, these can have different types of data unlike matrices
- Data frames can have strings and integers



dataframe

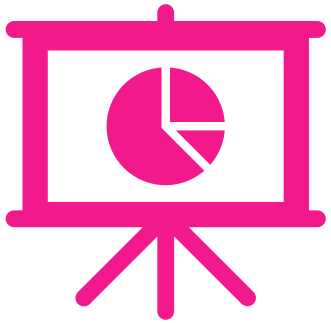
x	y
12.3	ace
3	tea
5.01	oil
2.3	tree

matrix

12.3	0.1
3.0	5.2
5.01	3.0
2.3	0.1

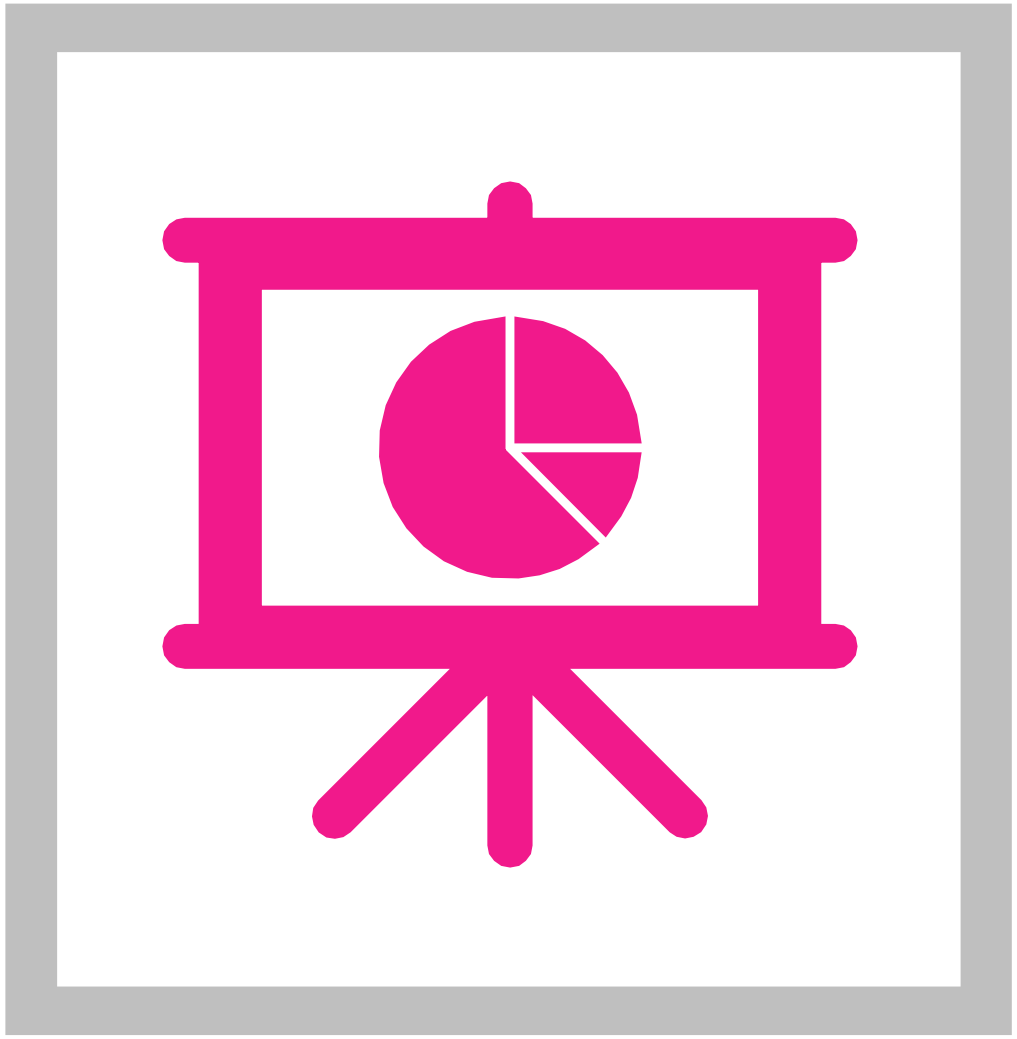
Libraries

There are many inbuilt libraries.



We are going to look at GGPLOT2 – which plots graphs

Histogram



Histogram: is a graphical display of data using bars of different heights. It is similar to a Bar Chart, but a **histogram** groups numbers into ranges . The height of each bar shows how many fall into each range.

Home Learning Tasks

Home Learning

1. Write an R program to create three vectors a, b, c with 5 integers. Combine the three vectors to become a 3×5 matrix where each column represents a vector. Print the content of the matrix. Plot a graph and label correctly.
2. Write a R program to create a Data frames which contain details of 5 employees and display the details. (Name, Age, Gender, Role and Length of service).
3. Import the GGPLOT 2 library and plot a graph using the qplot function. X axis is the sequence of 1:20 and the y axis is the x ^ 2. Label the graph appropriately. install.packages("ggplot2", dependencies = TRUE)
4. Create a simple bar plot of five subjects

Challenge

1. Write a R program to get the first 10 Fibonacci numbers.

2. Write a R program to print the numbers from 1 to 100 and print "Fizz" for multiples of 3, print "Buzz" for multiples of 5, and print "FizzBuzz" for multiples of both.

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