**WORKSHOP 2 9th October 2017**

**Worksheet – we built this software on base R code**

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**Copy and paste the code you used and the output generated for each part or else save it as an Rscript for this workshop so you have a record of what you have done**

**Part A: Data structures I**

1. Objects obtain values in R by assignment (x gets a value)

Type the following to create the object x with a value of five:

x <- 5

1. Atomic vectors contain one type of data. Using “<-” and the concatenate function (“c()”), create a numeric, character and logical vector. Name them;

all\_numbers

all\_characters

all\_logical

e.g. all\_characters <- c(“Here”, “we”, “go”)

1. Lists can contain more than one data type. Using the list() function, create (i) a list that contains different data types and (ii) another list comprised of “all\_numbers”, “all\_chararacters” and “all\_logical” created in Q2.
2. Last week we used “:” to generate a list of numbers. As a refresher, create a new object called y and assign a sequence of numbers to it (e.g 1:10)
3. We can do something similar with letters. Try the following and check the output:

first\_10\_letter <- letters[1:10]

1. You might want to get a random sample of letters. Try the following code and view the output. Do you understand all the elements of the code?

random\_letters <- sample(letters, 10, replace = FALSE)

PART B: Data structures II

1. Create a simple matrix using the following code and view it.

a\_matrix <- matrix(1:16, 4, 4)

1. Create a simple data frame using the following code and view it. Do you understand all the functions used?

a\_data\_frame <- data.frame(number = 1:10,

char = sample(letters, 10),

this\_really\_a\_col\_name = rep(c(TRUE, FALSE), 5))

1. A very useful R function is str(). It compactly displays the internal structure of an R object. Use it now to get the structure of “a\_matrix” and “a\_data\_frame”.

PART C: (i) Go to script1\_baseR\_indexing\_and\_functions.R for accessing data

(ii) Go to script2\_factors.R for a quick factor example

PART D: Go to script3\_house\_registrations.R

1. Let’s build on some of the tidyverse functions from last week to start building up some plots of house registrations in Ireland over the past 40 years.
2. Take note of the changes to the code for each plot and understand how it changes the output as you go