# Department of Computing

# Lab 5: Getting started with R and building our R applications

**CLO3: Develop applications and tools using various frameworks**

**Date: March 7, 2018**

# Time: 09:00 – 12:00

# Instructor: Zain ul Hassan Khan

# Lab 5: Getting started with R and building R application

## Introduction

In this lab we will build our first application using R. R is a language used mostly for statistical data analysis. Data scientists are also using R for data analysis. In this lab we will

* Install R and R Studio.
* Get started with basic syntax of R and get acclimatized to the R studio IDE.
* Build our first application using R
* Perform Analysis on the Data Set

## Objectives

* Get started with R and R Studio
* Get familiarized with R’s syntax and capabilities by building an application

## Tools/Software Requirement

* R and R Studio

**Description**

Each student must, individually build the complete application on their own. Students must upload their solutions on LMS to qualify for evaluation. The following reasons can lead to losing marks

* Any exceptions or errors leading to non-execution of submitted code.
* Failure to upload the solution on LMS.
* Failure to submit original code.
* Failure to use GitHub for the code.
* Failure to explain the submission, during viva.

**Lab Task**

1. Install R and R Studio.
2. Get your self familiarize with R language and its syntax. Go through all the challenges on <http://tryr.codeschool.com/>
3. Complete reading and practice of Chapter Painless Data Visualization of R: a beginner’s guide (on LMS). (Pgs: 17 – 25)
4. Use the mtcars data set to plot different graphs in order to convince a buyer which is the best car to buy. Assume some kind of criteria that the car is interested in e.g. Young buyer with interest in speed, or an executive thinking of buying a luxury sedan etc.
5. Submit code and graphs developed in point 4.
6. Using the AirPassengers data set in R.(This Data Set is provided by R) Assume a constant price of air ticket and

* Find the most profitable month in the 12 years’ data
* Find the most profitable year in the 12 years
* Plot the company’s growth over the 12 year period.

1. Assume some price of ticket for the first year of data e.g Rs 8000. The price of ticket increases by 10% every year. Based on these assumptions

* calculate the highest revenue month in the 12 years’ data
* Calculate the highest revenue year in the 12 years of operations
* Calculate the total revenue of the 12 years

1. Can you identify trends like,

* Which months in a year are the most travelled ones

## Deliverables

* Each submission is individual with the following composition:
  + Source Code
  + Documentation (Comments)
  + Link to the public repository preferably on GitHub
* Convert your submission files into a zip folder and name it as given below, finally upload the zip folder to LMS.
  + Name – Registration No. – Section

## Grade Criteria

This lab is graded. Min marks: 0. Max marks: 10.

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| **Activity** | **Minimum** | **Maximum** |
| Task 1-Installing R and Rstudio successfully | 0 | 2 |
| T 2-Code clarity with clean, formatted and commented code. | 0 | 1 |
| T-3Completing Codeschool tutorials | 0 | 2 |
| T-4Completing Chapter Painless Data Visualization | 0 | 2 |
| T-5Completing mtcars exercise | 0 | 3 |
| Task 6 | 0 | 3 |
| Task 7 | 0 | 3 |
| Task 8 | 0 | 4 |
| **Total** | **0** | **20** |

**Links for Learning:**

<http://tryr.codeschool.com/>

<http://www.r-tutor.com/r-introduction>