# Introduction

This report will introduce R package `ggplotIntro` and how I develop the package. I choose R for three main reasons: first, R is free and open-sourced; second, people can do basic analyses without advanced coding or programming knowledges; third, also the most important point, R has hundreds of packages. The `ggplot2` package is a very useful and basic package. It is so representative because it shows how R can draw plots and it always the first package when a person starts learning R. If a new learner knows how to use `ggplot2` package, the person can do basic data plotting and analysis. `ggplotIntro` Package is mainly used for new `ggplot2` package learner. Targeted group is new R learner. New R learners are defined as people who never used R before and have little knowledge about programming. I understand the difficulties for new learners because I learned accounting for my bachelor degree and I still remember how I struggled when I started learning R – those lines of code look like puzzles to me. For anyone who wants to learn programming languages, not only R, two most important characteristics are self-motivation and self-learning. Because R is open-sourced, there are many websites can teach how to learn R, such as \*stackoverflow\* and \*RStudio Community\*. For most of problems and issues, we can find answers by googling. But I know a realistic issue for most new learners – learning programming, especially at beginning, it’s boring and difficult. For myself, at beginning, I always copy and paste sample code and make minor changes to see how output changes. It takes me a while to understand how to read documentation of packages and functions. Most of university students do not have problems about self-learning, but self-motivation could be an issue. As I said, programming is boring at beginning, so new learners need motivation. Motivation can be internal or external. My project is aiming to provide \*\*external motivation\*\*.

## Context of the project

Due to COVID-19, first time I get in touch with my supervisor was in week 7. In first two meetings, we just have brief talk about the project and I drew a simple design sheet about the project. So, I started to work on the project since week 8.

# Design of the shiny app

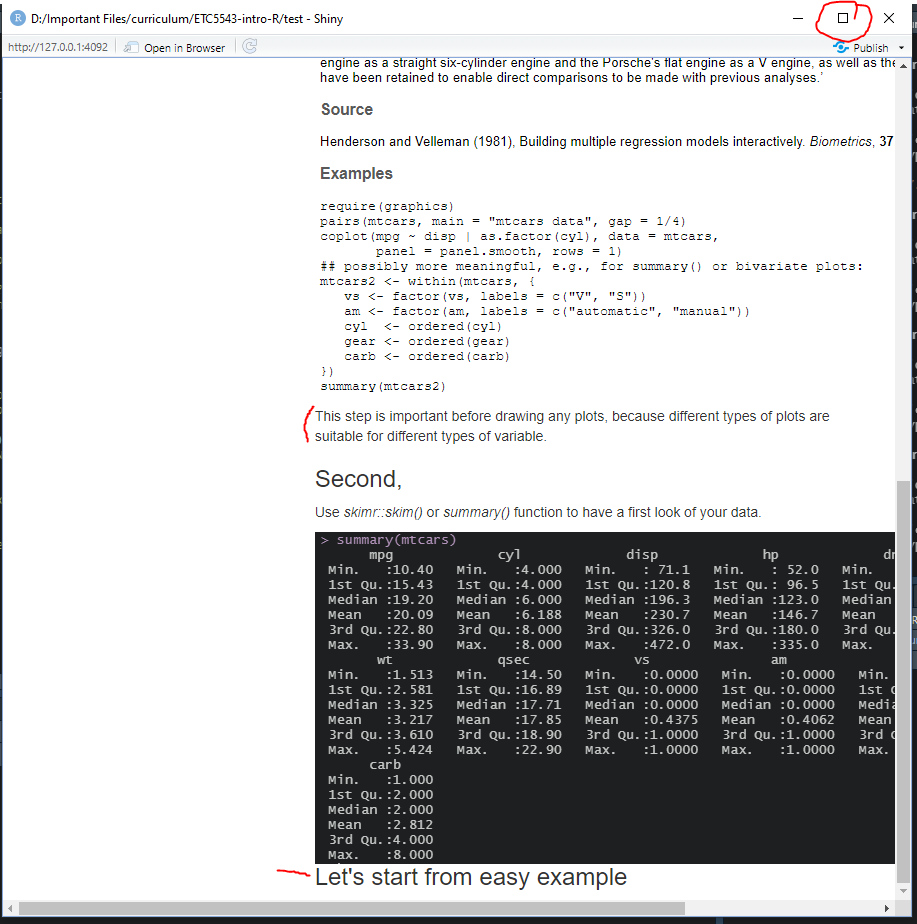
## Gamification

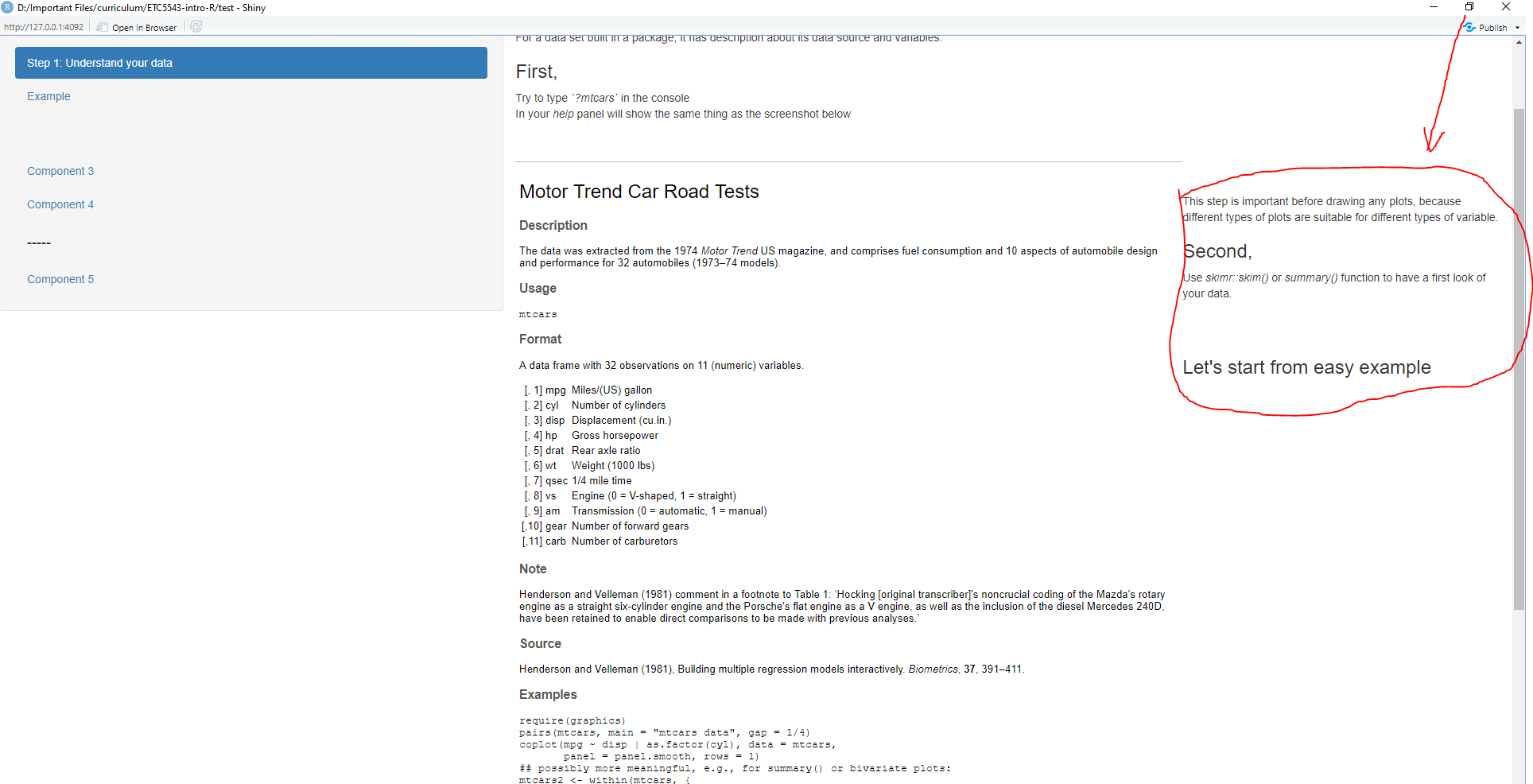
In my thought, the `ggplotIntro` should be interesting. So, I studied how to make learning progress interesting. My supervisor and I both agreed that gamifying learning progress could be a good option. Educational games have been successfully used to teach a number of school subjects [@corbett2001cognitive]. As a video game lover and current R learner, I know that when a person receives positive feedback from learning/gaming, he/she is likely to be motivated and wants to learn/play more. So, the project must have a score system. A pop up window will send a congratulatory message when the user gives correct answer or send a message containing comforting words and tips on solving questions.

# Challenges

## Text display issue

The first issue I met is part of the text in the shiny app does not display in right way. Two screenshots depict the issue. After I maximising the window of the shiny app, some paragraphs would be dislocated. Later, I found the reason is the issue of the column width in the shiny app – when I write too much text in shiny app, the text will find a way to fill the full column width.





At first, I tried to set specific column width for each paragraph