Practical 1

Jumping Rivers

First we must load the **tidyverse**

```
library("tidyverse")
```

Question 1 - lists

For this question, there is no **purrr**. It's a few questions to get you used to lists.

a) Create a list that contains a numeric, a logical, a character, a vector.

b) Name the elements of your list

c) The following code will load a list called `toy` into your global environment

```
data(toy, package = "jrTidyverse2")
```

Make sure to take a look at `toy` before you dive in. How many elements are in toy?

d) Add an extra element called `z` onto `toy`. `z` can be whatever object you like.

e) What is the average of the element `d` within `toy`?

f) What is the average of the column `f` within element `e` of `toy`?

g) What is the average of the column `f` in the element `e`, where the values of the column `g` are `"a"`?

Question 2 - purrr beginnings

a) If we have a vector `x`, we can square root it using the `sqrt()` function

```
x = c(1,4,9,25)
sqrt(x)
```

Can you do the same but using the `map` functions? Make sure your output is a vector.

Question 3 - Happiness

Now we're going to look at a list containing information such as happiness and economy rankings for countries around the globe in the years 2015, 2016 and 2017.

```
data(happiness, package = "jrTidyverse2")
```

a) Using `str()` to investigate the list and determine:

- How long is the list?
- Is the list a recursive list?
- How many countries does the list contain information on?
- For each country, how many piece of information do we have?

b) Extract the name of each country using the `map` functions. To make it a bit easier to read, return the output as a character vector.

c) Try `names(happiness)`, what happens? Use the answer to `b)` to rename each element of the list after it's representative country.

d) What has the UKs happiness rank been over the last 3 years? (You don't have to use **purrr** for this one.)

e) Which country has had the highest average happiness score?

f) Which country has had the largest increase in happiness score from 2015 - 2017?

g) Which country has had the largest decrease in life expectency?

Question 4 - Happiness - Advanced

The following two questions are intended to be a bit trickier. Don't worry if you get stuck on them. Just ask!

a) How many countries economies have shrunk from 2015 - 2017?

b) On average, which region of the world is the most "generous"?
Hint: store the region for each country in a vector, combine it into a data frame with the average generosity score for each country then use **dplyr**.

c) Using **ggplot2** and `geom_col()`, plot the answer to b) as a bar chart