Assignment2

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9/24/2019

```
library('tidyverse')
library('gapminder')
library('ggrepel')
library('patchwork')
library('scales')
library('knitr')
library('rmarkdown')
```

```
df.1952 = gapminder %>% filter(year == 1952)
df.2002 = gapminder %>% filter(year == 2002)
df.1952.kuwait = df.1952 %>% filter(country == 'Kuwait')
df.2002.kuwait = df.2002 %>% filter(country == 'Kuwait')

colors <- c("red2", "steelblue", "forestgreen", "blueviolet", "darkorange")
```

```
p = ggplot(df.1952, aes(x=gdpPercap, y=lifeExp, color=continent, size = pop)) +
        geom_point(alpha = 0.5) +
        scale_x_log10(labels = scientific,
                      breaks = c(1e+3, 1e+4, 1e+5),
                      limits = c(2.2e+2, 1.2e+5)) +
        scale_size(breaks = seq(1e+5, 1.5e+9, 3e+8),
                   limits = c(1e+4, 1.5e+9),
                   range = c(1, 10), labels = scales::comma) +
        ylim(c(27, 82)) +
        theme(legend.position = 0) +
        xlab("GDP per capita") +
        ylab("Life Expectancy, years") +
        geom_text_repel(data = df.1952.kuwait,
                    aes(x = gdpPercap, y = lifeExp, label = country),
                    segment.color = 'grey50',
                    color = 'grey50',
                    segment.size = 0.5,
                    size = 4,
                    nudge_y = -8) +
        scale_color_manual(values = colors) +
        annotate("text", x = 3e+04, y = 30, label = "1952", size = 10, color = 'grey80')

a = ggplot(df.2002, aes(x=gdpPercap, y=lifeExp, color=continent, size=pop)) +
        geom_point(alpha = 0.5) +
        scale_x_log10(labels = scientific,
                      breaks = c(1e+3, 1e+4, 1e+5),
                      limits = c(2.2e+2, 1.2e+5)) +
        scale_size(breaks = seq(1e+5, 1.5e+9, 3e+8),
                   limits = c(1e+4, 1.5e+9),
                   range = c(1, 10), labels = scales::comma) +
        ylim(c(27, 82)) +
```

```
        xlab("GDP per capita") +
        ylab("Life Expectancy, years") +
        labs(size = "Population size", color = "Continent") +
        geom_text_repel(data = df.2002.kuwait,
                        aes(x = gdpPercap, y = lifeExp, label = country),
                        segment.color = 'grey50',
                        color = 'grey50',
                        segment.size = 0.5,
                        size = 4,
                        nudge_y = -8) +
        scale_color_manual(values =colors) +
        annotate("text", x = 3e+04, y = 30, label = "2002", size = 10, color = 'grey80')

p+a
```