fml assignment 1

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```
library(ggplot2)
```

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Source file is from kaggle(https://www.kaggle.com/datasets/sanjanchaudhari/population-dataset)

Import

```
data <- read.csv("C:/Users/santo/OneDrive/Desktop/archive/2015.csv")
head(data)
```

```
##       Country         Region Happiness.Rank Happiness.Score Standard.Error
## 1 Switzerland Western Europe              1           7.587        0.03411
## 2     Iceland Western Europe              2           7.561        0.04884
## 3     Denmark Western Europe              3           7.527        0.03328
## 4      Norway Western Europe              4           7.522        0.03880
## 5      Canada  North America              5           7.427        0.03553
## 6     Finland Western Europe              6           7.406        0.03140
##   Economy..GDP.per.Capita.  Family Health..Life.Expectancy. Freedom
## 1                  1.39651 1.34951                  0.94143 0.66557
## 2                  1.30232 1.40223                  0.94784 0.62877
## 3                  1.32548 1.36058                  0.87464 0.64938
## 4                  1.45900 1.33095                  0.88521 0.66973
## 5                  1.32629 1.32261                  0.90563 0.63297
## 6                  1.29025 1.31826                  0.88911 0.64169
##   Trust..Government.Corruption. Generosity Dystopia.Residual
## 1                       0.41978    0.29678           2.51738
## 2                       0.14145    0.43630           2.70201
## 3                       0.48357    0.34139           2.49204
## 4                       0.36503    0.34699           2.46531
## 5                       0.32957    0.45811           2.45176
## 6                       0.41372    0.23351           2.61955
```

```
summary(data$Happiness.Score)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.839   4.526   5.232   5.376   6.244   7.587
```

Descriptive Statistics for quantitative variables

```
data_des = c("Happiness.Score", "Family", "Generosity")
summary_quant = summary(data[data_des])
print(summary_quant)
```

```
##  Happiness.Score     Family         Generosity
##  Min.   :2.839   Min.   :0.0000   Min.   :0.0000
##  1st Qu.:4.526   1st Qu.:0.8568   1st Qu.:0.1506
##  Median :5.232   Median :1.0295   Median :0.2161
##  Mean   :5.376   Mean   :0.9910   Mean   :0.2373
##  3rd Qu.:6.244   3rd Qu.:1.2144   3rd Qu.:0.3099
##  Max.   :7.587   Max.   :1.4022   Max.   :0.7959
```

Descriptive Statistics for categorical variables

```
data_cat = c("Region", "Country")
summary_cat = sapply(data[data_cat], table)
print(summary_cat)
```

```
## $Region
##
##       Australia and New Zealand      Central and Eastern Europe
##                               2                              29
##                    Eastern Asia     Latin America and Caribbean
##                               6                              22
## Middle East and Northern Africa                   North America
##                              20                               2
##               Southeastern Asia                   Southern Asia
##                               9                               7
##              Sub-Saharan Africa                  Western Europe
##                              40                              21
##
## $Country
##
##              Afghanistan                 Albania                 Algeria
##                        1                       1                       1
##                   Angola               Argentina               Armenia
##                        1                       1                       1
##                Australia                 Austria              Azerbaijan
##                        1                       1                       1
##                  Bahrain              Bangladesh                 Belarus
##                        1                       1                       1
##                  Belgium                   Benin                  Bhutan
##                        1                       1                       1
##                  Bolivia  Bosnia and Herzegovina                Botswana
##                        1                       1                       1
##                   Brazil                Bulgaria            Burkina Faso
##                        1                       1                       1
```

```
##                  Burundi                 Cambodia                 Cameroon
##                        1                        1                        1
##                   Canada Central African Republic                     Chad
##                        1                        1                        1
##                    Chile                    China                 Colombia
##                        1                        1                        1
##                  Comoros      Congo (Brazzaville)         Congo (Kinshasa)
##                        1                        1                        1
##              Costa Rica                  Croatia                   Cyprus
##                        1                        1                        1
##          Czech Republic                  Denmark                 Djibouti
##                        1                        1                        1
##       Dominican Republic                  Ecuador                    Egypt
##                        1                        1                        1
##              El Salvador                  Estonia                 Ethiopia
##                        1                        1                        1
##                  Finland                   France                    Gabon
##                        1                        1                        1
##                  Georgia                  Germany                    Ghana
##                        1                        1                        1
##                   Greece                Guatemala                   Guinea
##                        1                        1                        1
##                    Haiti                 Honduras                Hong Kong
##                        1                        1                        1
##                  Hungary                  Iceland                    India
##                        1                        1                        1
##                Indonesia                     Iran                     Iraq
##                        1                        1                        1
##                  Ireland                   Israel                    Italy
##                        1                        1                        1
##              Ivory Coast                  Jamaica                    Japan
##                        1                        1                        1
##                   Jordan               Kazakhstan                    Kenya
##                        1                        1                        1
##                   Kosovo                   Kuwait                Kyrgyzstan
##                        1                        1                        1
##                     Laos                   Latvia                  Lebanon
##                        1                        1                        1
##                  Lesotho                  Liberia                    Libya
##                        1                        1                        1
##                Lithuania               Luxembourg                Macedonia
##                        1                        1                        1
##               Madagascar                   Malawi                 Malaysia
##                        1                        1                        1
##                     Mali                    Malta                Mauritania
##                        1                        1                        1
##                Mauritius                   Mexico                  Moldova
##                        1                        1                        1
##                 Mongolia               Montenegro                  Morocco
##                        1                        1                        1
##               Mozambique                  Myanmar                    Nepal
##                        1                        1                        1
##              Netherlands              New Zealand                Nicaragua
##                        1                        1                        1
```

```
##                     Niger                   Nigeria             North Cyprus
##                         1                         1                         1
##                    Norway                      Oman                 Pakistan
##                         1                         1                         1
##  Palestinian Territories                    Panama                  Paraguay
##                         1                         1                         1
##                      Peru                  Philippines                    Poland
##                         1                         1                         1
##                  Portugal                     Qatar                   Romania
##                         1                         1                         1
##                    Russia                    Rwanda              Saudi Arabia
##                         1                         1                         1
##                   Senegal                    Serbia              Sierra Leone
##                         1                         1                         1
##                 Singapore                  Slovakia                  Slovenia
##                         1                         1                         1
##        Somaliland region              South Africa               South Korea
##                         1                         1                         1
##                     Spain                 Sri Lanka                     Sudan
##                         1                         1                         1
##                  Suriname                 Swaziland                    Sweden
##                         1                         1                         1
##               Switzerland                     Syria                    Taiwan
##                         1                         1                         1
##                Tajikistan                  Tanzania                  Thailand
##                         1                         1                         1
##                      Togo       Trinidad and Tobago                   Tunisia
##                         1                         1                         1
##                    Turkey              Turkmenistan                    Uganda
##                         1                         1                         1
##                   Ukraine      United Arab Emirates            United Kingdom
##                         1                         1                         1
##             United States                   Uruguay                Uzbekistan
##                         1                         1                         1
##                 Venezuela                   Vietnam                     Yemen
##                         1                         1                         1
##                    Zambia                  Zimbabwe
##                         1                         1
```

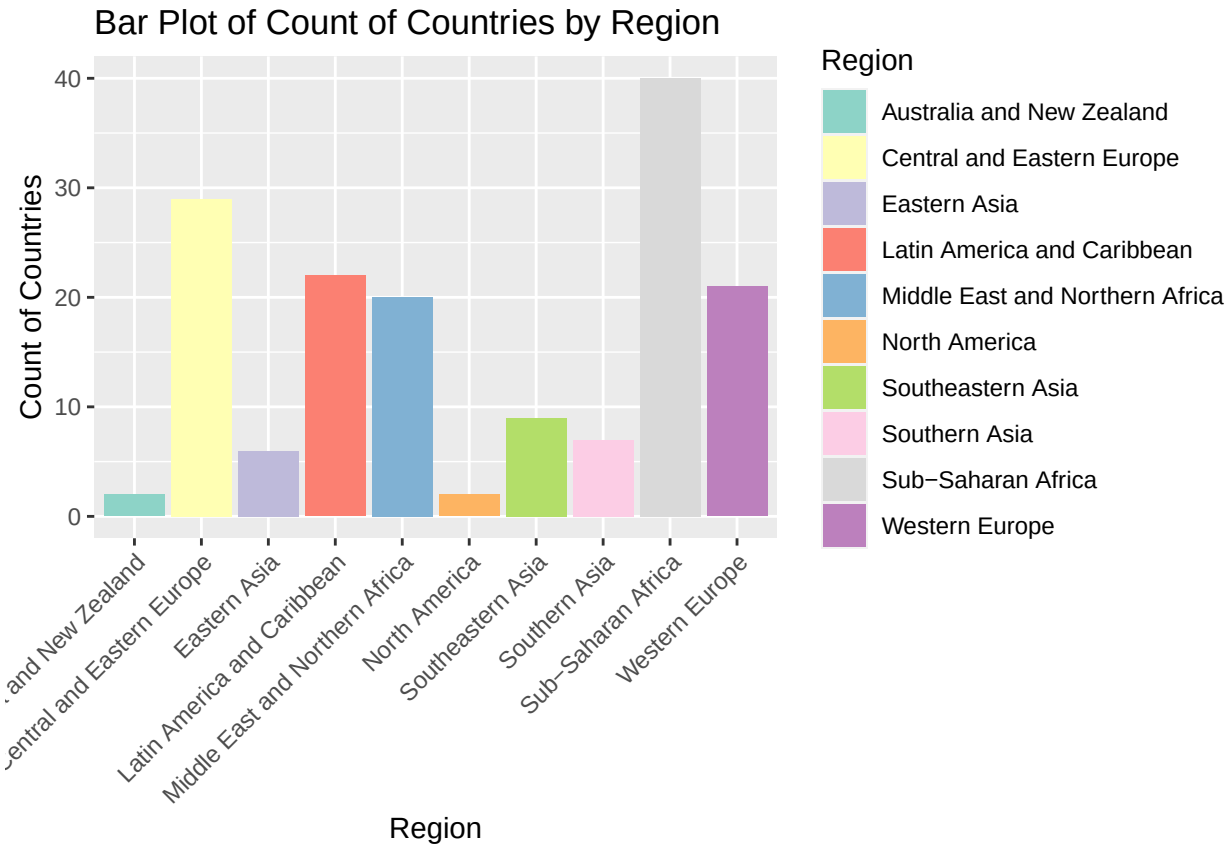
Transformation

```
transformation = data$Life_Expectancy/1000
```

Bar Plot for Count of Countries by Region

```
bar_plot_region_count <- ggplot(data, aes(x = Region, fill = Region)) +
  geom_bar(stat = "count") +
  labs(title = "Bar Plot of Count of Countries by Region",
```

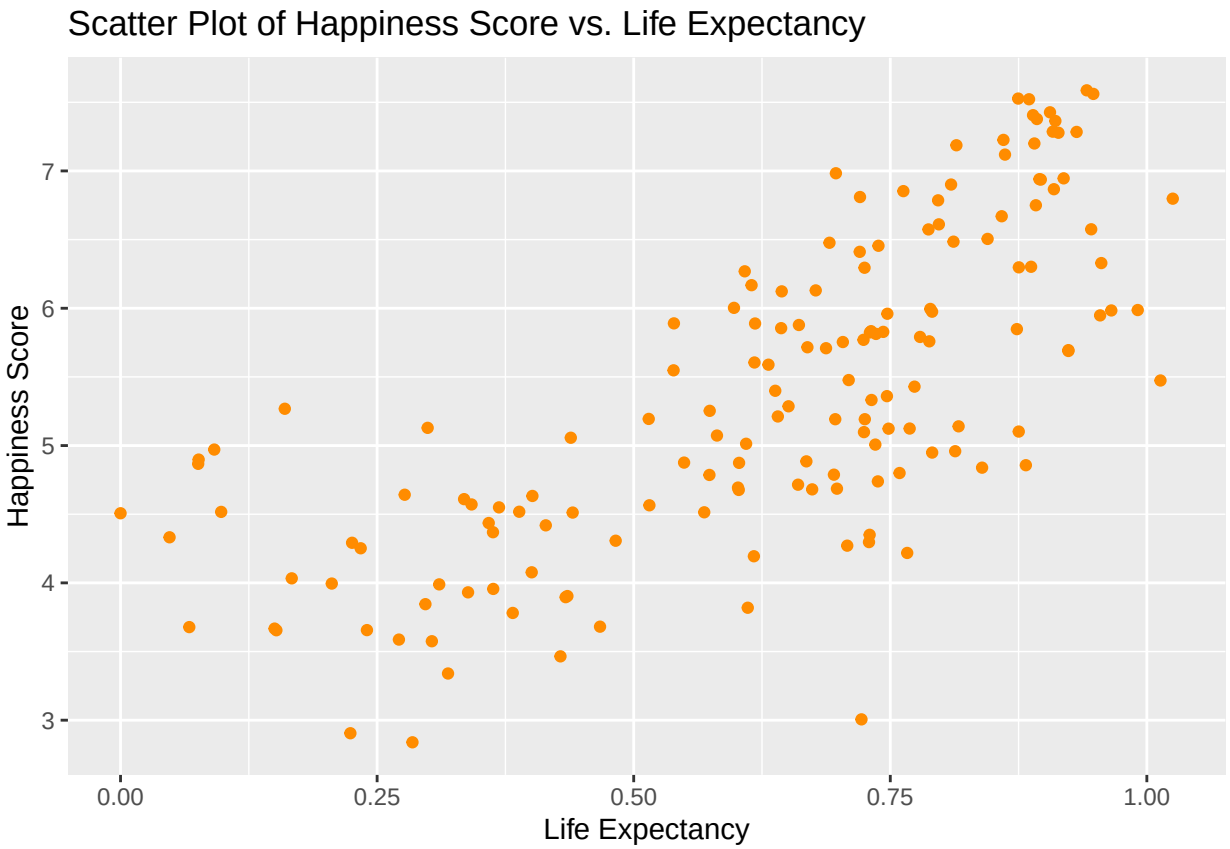
```
       x = "Region",
       y = "Count of Countries") +
  theme(axis.text.x = element_text(angle = 45, hjust = 1)) +
  scale_fill_brewer(palette = "Set3")

print(bar_plot_region_count)
```



Scatter Plot for Happiness.Score vs. Life_Expectancy

```
ggplot(data, aes(x = data$Health..Life.Expectancy., y = Happiness.Score)) +
  geom_point(color = "darkorange") +
  labs(title = "Scatter Plot of Happiness Score vs. Life Expectancy",
       x = "Life Expectancy",
       y = "Happiness Score")
```

```
## Warning: Use of ‘data$Health..Life.Expectancy.‘ is discouraged.
## i Use ‘Health..Life.Expectancy.‘ instead.
```


Scatter Plot of Happiness Score vs. Life Expectancy
Happiness Score
7
6
5
4
3
0.00
0.25
0.50
0.75
1.00
Life Expectancy