Assignment 5

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```
install.packages("ellipse")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.5'
## (as 'lib' is unspecified)
```

```
library(ellipse)
```

```
##
## Attaching package: 'ellipse'
```

```
## The following object is masked from 'package:graphics':
##
##     pairs
```

Dataset

The `penguins` dataset (available through the `palmerpenguins` package and can be loaded after installing and loading the package) contains real-world data collected from three penguin species are Adélie, Chinstrap, and Gentoo living in the Palmer Archipelago of Antarctica. The measurements were taken between 2007 and 2009 consists many variables about the penguins such as `species`, `island`, `bill_length_mm`, and so on.

```
data("penguins")
head(penguins)
```

```
##   species    island bill_len bill_dep flipper_len body_mass    sex year
## 1  Adelie Torgersen     39.1     18.7         181      3750   male 2007
## 2  Adelie Torgersen     39.5     17.4         186      3800 female 2007
## 3  Adelie Torgersen     40.3     18.0         195      3250 female 2007
## 4  Adelie Torgersen       NA       NA          NA        NA   <NA> 2007
## 5  Adelie Torgersen     36.7     19.3         193      3450 female 2007
## 6  Adelie Torgersen     39.3     20.6         190      3650   male 2007
```

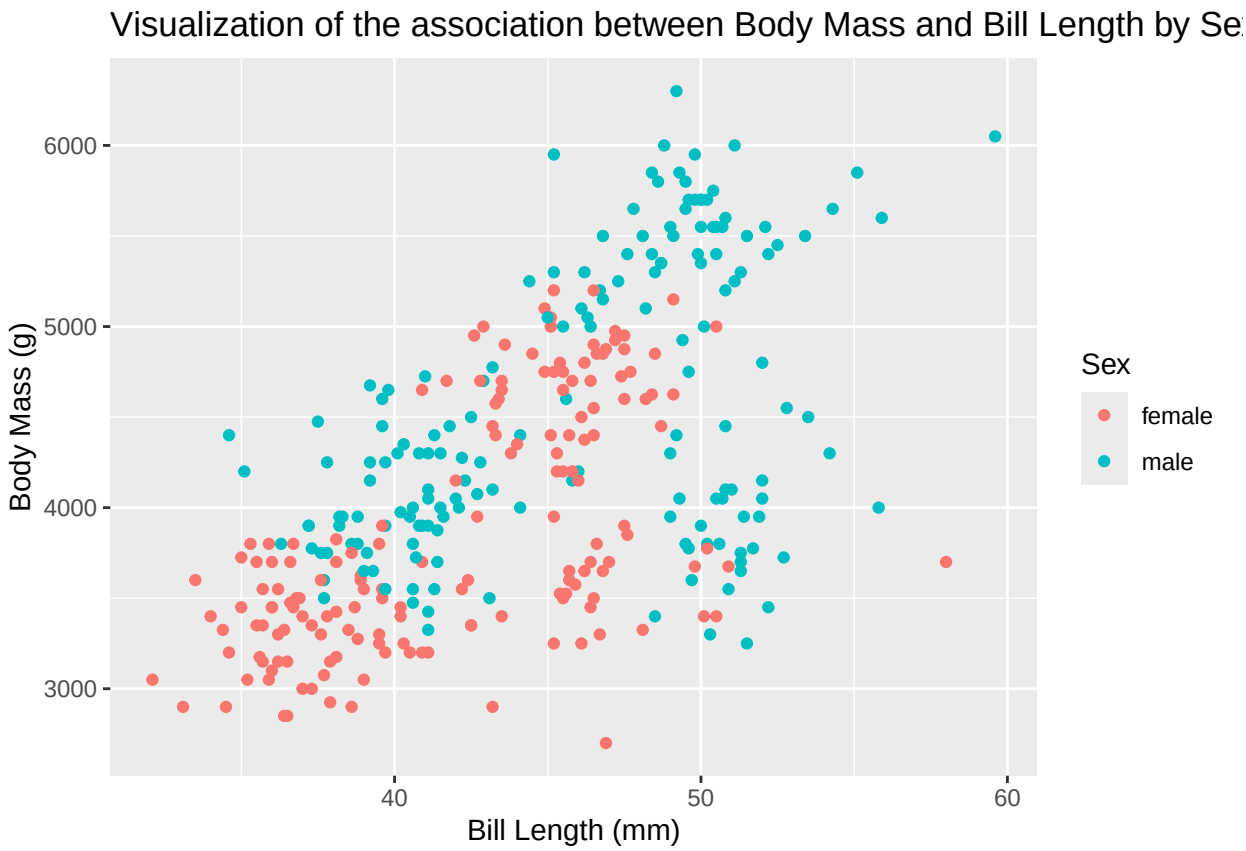
Drawing a plot for association

1. Draw a single plot showing association between the bill lengths and body mass of the penguins according to the their sex (60 pts).

```
penguins_clean <- na.omit(penguins[, c("bill_len", "body_mass", "sex")])


ggplot(penguins_clean,
       aes(x = bill_len,
           y = body_mass,
           colour = sex)) +
```

```
  geom_point() +
  labs(
    title = "Visualization of the association between Body Mass and Bill Length by Sex",
    x = "Bill Length (mm)",
    y = "Body Mass (g)",
    colour = "Sex"
  )
```



2. Interpret the plot (40 pts). There is a positive relationship between body mass and bill length in penguins.