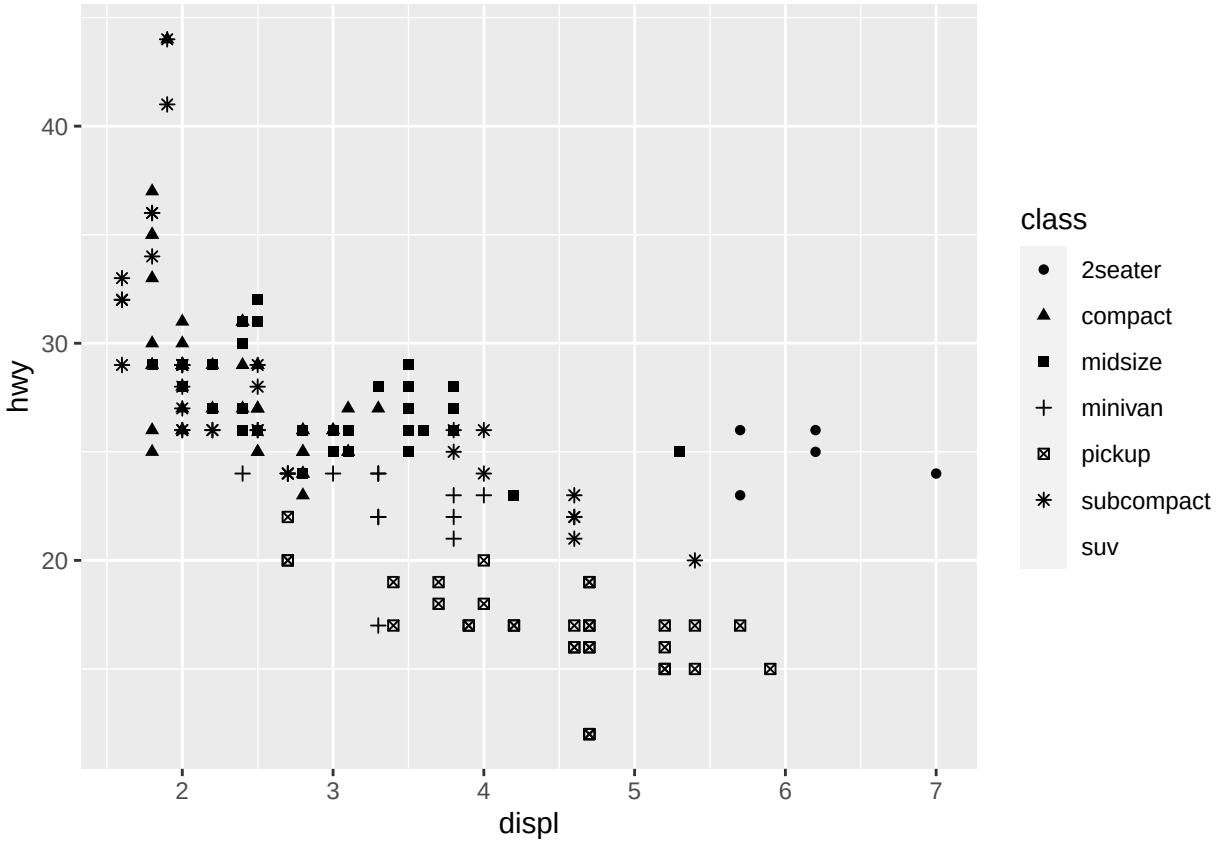
# Internal Assessment 2

ECON03SEC1
Department of Economics
Presidency University, Kolkata
Full Marks: 40
21/01/2022

**Group 1 (R)**

Answer all of the following questions. [$4 \times 5 = 20$]

1. Using the `mpg` dataset in the `ggplot2` package, replicate the following plot.




2. Calculate the mean *mpg* (miles per gallon) of the cars with 6 and 4 cylinders in `mtcars` dataset in the base R `datasets` package.

3. Tidy and replicate the `us_rent_income` dataset in the `tidyr` package as given below.

```
## # A tibble: 14 x 5
##    GEOID NAME            moe income  rent
##    <chr> <chr>         <dbl>  <dbl> <dbl>
##  1 01    Alabama           3     NA   747
##  2 39    Ohio              2     NA   764
##  3 40    Oklahoma          3     NA   766
##  4 18    Indiana           3     NA   782
##  5 55    Wisconsin         3     NA   813
##  6 26    Michigan          3     NA   824
##  7 37    North Carolina    3     NA   844
##  8 42    Pennsylvania      3     NA   885
##  9 13    Georgia           3     NA   927
## 10 17    Illinois          3     NA   952
## 11 48    Texas             2     NA   952
## 12 12    Florida           3     NA  1077
## 13 36    New York          3     NA  1194
## 14 06    California        3     NA  1358
```

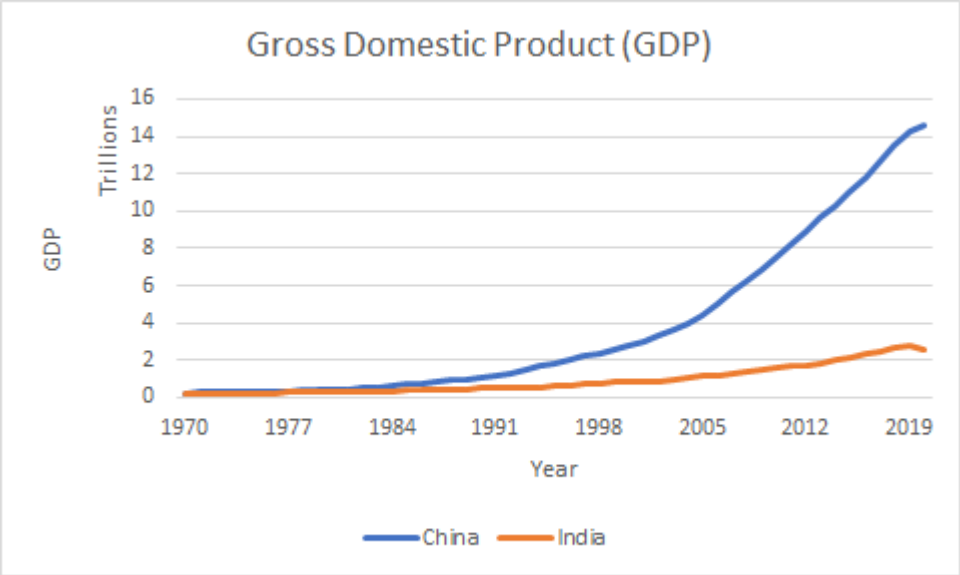
4. Explain the following codes and their outputs.

```r
library(gapminder)
filter(gapminder, continent %in% c("Asia", "Africa"))
```

**Group 2 (Excel)**

Answer all of the following questions. $[4 \times 5 = 20]$

10. Using the `GDP.xlsx` data replicate the following plot.




2. What is the average displacement of a manual car with 4 cylinders in the `mtcars.xlsx` dataset?
3. Rank (without ties) the countries according to the Gross Domestic Product (GDP) in the `GDP.xlsx` dataset.

4. Suppose that the firm's production function is $Q = F(K, L) = 50K^{0.5}L^{0.5}$. Suppose, too, that the price of labour w=5 and the price of capital r=20. What is the cost minimising input bundle if the firm wants to produce 1,000 units per year?