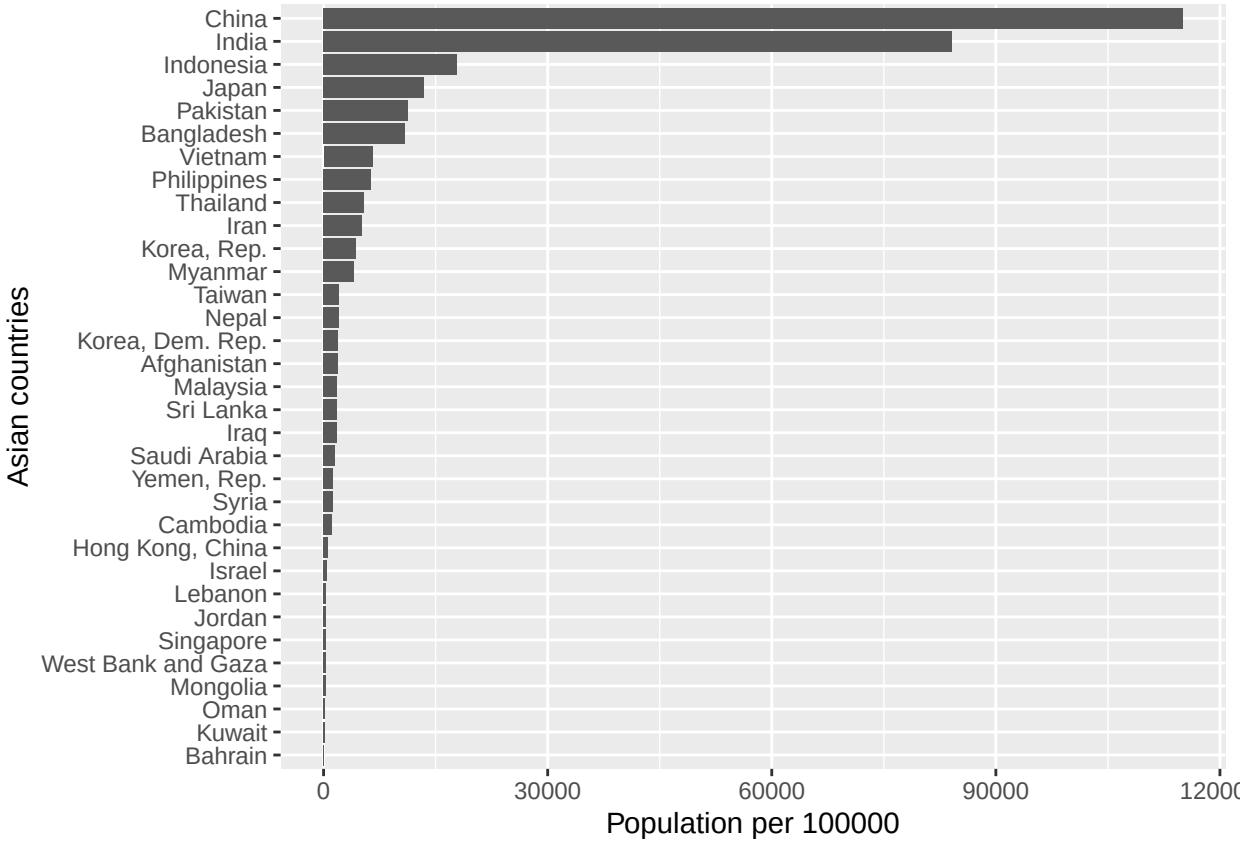
Internal Assessment 2

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 `gapminder` data in the `gapminder` package, replicate the following plot.



2. What is the average displacement of a manual car with 4 cylinders in the `mtcars` dataset in the base R `datasets` package?

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

```
## # A tibble: 4 x 81
##   artist track  year month   day   wk1   wk2   wk3   wk4   wk5   wk6   wk7   wk8
##   <chr>  <chr> <int> <int> <int> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
## 1 Backs~ Show~  2000     1     1    74    62    55    25    16    14    12    10
## 2 Brock~ A Co~  2000     1     1    93    75    92    NA    NA    NA    NA    NA
## 3 Diffi~ The ~  2000     1     1    98   100   100    90    93    94    NA    NA
## 4 Joe    I Wa~  2000     1     1    94    86    69    50    41    33    32    28
## # ... with 68 more variables: wk9 <dbl>, wk10 <dbl>, wk11 <dbl>, wk12 <dbl>,
## #   wk13 <dbl>, wk14 <dbl>, wk15 <dbl>, wk16 <dbl>, wk17 <dbl>, wk18 <dbl>,
## #   wk19 <dbl>, wk20 <dbl>, wk21 <dbl>, wk22 <dbl>, wk23 <dbl>, wk24 <dbl>,
## #   wk25 <dbl>, wk26 <dbl>, wk27 <dbl>, wk28 <dbl>, wk29 <dbl>, wk30 <dbl>,
## #   wk31 <dbl>, wk32 <dbl>, wk33 <dbl>, wk34 <dbl>, wk35 <dbl>, wk36 <dbl>,
## #   wk37 <dbl>, wk38 <dbl>, wk39 <dbl>, wk40 <dbl>, wk41 <dbl>, wk42 <dbl>,
## #   wk43 <dbl>, wk44 <dbl>, wk45 <dbl>, wk46 <dbl>, wk47 <dbl>, wk48 <dbl>,
## #   wk49 <dbl>, wk50 <dbl>, wk51 <dbl>, wk52 <dbl>, wk53 <dbl>, wk54 <dbl>,
## #   wk55 <dbl>, wk56 <dbl>, wk57 <dbl>, wk58 <dbl>, wk59 <dbl>, wk60 <dbl>,
## #   wk61 <dbl>, wk62 <dbl>, wk63 <dbl>, wk64 <dbl>, wk65 <dbl>, wk66 <lgl>,
## #   wk67 <lgl>, wk68 <lgl>, wk69 <lgl>, wk70 <lgl>, wk71 <lgl>, wk72 <lgl>,
## #   wk73 <lgl>, wk74 <lgl>, wk75 <lgl>, wk76 <lgl>
```

4. Explain the following codes and their outputs.

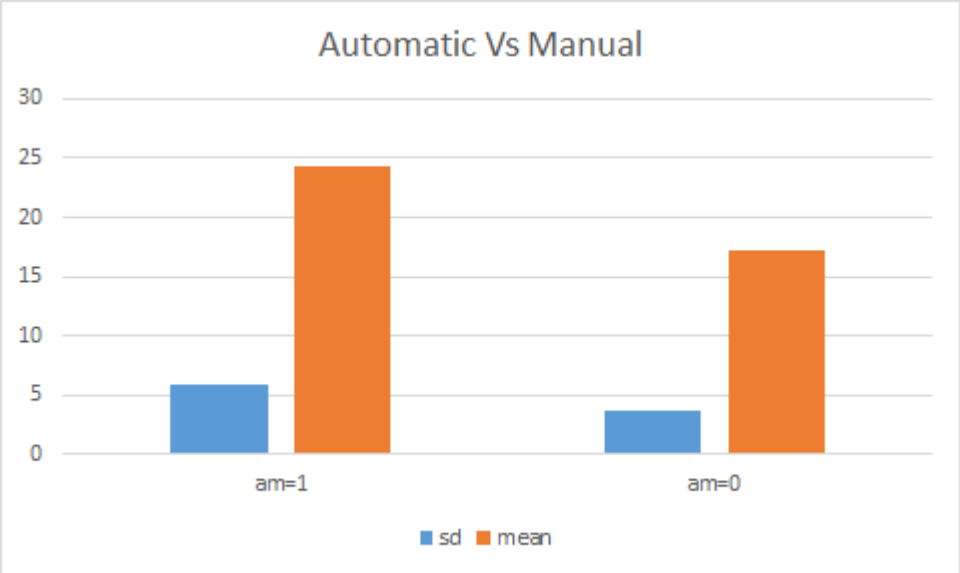
```r
s <- 1:5
rating <- factor(s)

(rating <- factor(s, ordered = TRUE,
                  levels = s))
```

Group 2 (Excel)

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

1. Using the `mtcars.xlsx` dataset replicate the followuing plot.



2. In the file `GDP.xlsx` how many countries do not have data on GDP?
3. How does the number of cylinders `cyl` affect the mileage `mpg` for a given horsepower `hp`? Calculate the partial correlation in the `mtcars.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?