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1.

```
library(dslabs)
data(murders)

pop = murders$population
sort(pop)
```

```
##  [1]   563626   601723   625741   672591   710231   814180   897934   989415
##  [9]  1052567  1316470  1328361  1360301  1567582  1826341  1852994  2059179
## [17]  2700551  2763885  2853118  2915918  2967297  3046355  3574097  3751351
## [25]  3831074  4339367  4533372  4625364  4779736  5029196  5303925  5686986
## [33]  5773552  5988927  6346105  6392017  6483802  6547629  6724540  8001024
## [41]  8791894  9535483  9883640  9920000 11536504 12702379 12830632 19378102
## [49] 19687653 25145561 37253956
```

```
terkecil <- sort(pop, decreasing = FALSE)
terkecil[1]
```

```
## [1] 563626
```

2.

```
index = order(pop)
index[1]
```

```
## [1] 51
```

3.

```
which.min(pop)[1]
```

```
## [1] 51
```

4.

```
murders$state[which.min(pop)[1]]
```

```
## [1] "Wyoming"
```

5.

```
ranks <- rank(pop)
my_df <- data.frame(state = murders$state, rank = ranks)
my_df
```

```
##                   state rank
## 1               Alabama   29
## 2                Alaska    5
## 3               Arizona   36
## 4              Arkansas   20
## 5            California   51
## 6              Colorado   30
## 7           Connecticut   23
## 8              Delaware    7
## 9  District of Columbia    2
## 10              Florida   49
## 11              Georgia   44
## 12               Hawaii   12
## 13                Idaho   13
## 14             Illinois   47
## 15              Indiana   37
## 16                 Iowa   22
## 17               Kansas   19
## 18             Kentucky   26
## 19            Louisiana   27
## 20                Maine   11
## 21             Maryland   33
## 22        Massachusetts   38
## 23             Michigan   43
## 24            Minnesota   31
## 25          Mississippi   21
## 26             Missouri   34
## 27              Montana    8
## 28             Nebraska   14
## 29               Nevada   17
## 30        New Hampshire   10
## 31           New Jersey   41
## 32           New Mexico   16
## 33             New York   48
## 34       North Carolina   42
## 35         North Dakota    4
## 36                 Ohio   45
## 37             Oklahoma   24
## 38               Oregon   25
## 39         Pennsylvania   46
## 40         Rhode Island    9
## 41       South Carolina   28
```

```
## 42         South Dakota    6
## 43            Tennessee   35
## 44                Texas   50
## 45                 Utah   18
## 46              Vermont    3
## 47             Virginia   40
## 48           Washington   39
## 49        West Virginia   15
## 50            Wisconsin   32
## 51              Wyoming    1
```

6.

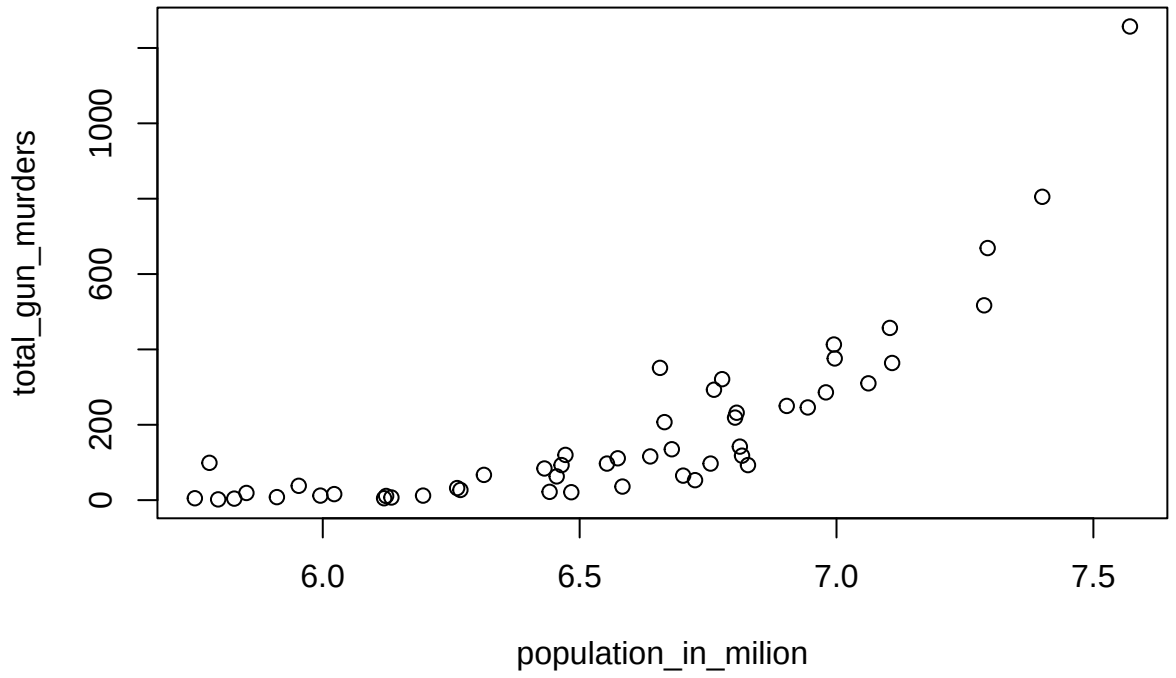
```
ind <- order(pop)
my_df <- data.frame(state = murders$state[ind], rank = ranks[ind], index =
ind)
my_df
```

```
##                   state rank index
## 1               Wyoming    1    51
## 2  District of Columbia    2     9
## 3               Vermont    3    46
## 4          North Dakota    4    35
## 5                Alaska    5     2
## 6          South Dakota    6    42
## 7              Delaware    7     8
## 8               Montana    8    27
## 9          Rhode Island    9    40
## 10        New Hampshire   10    30
## 11                Maine   11    20
## 12               Hawaii   12    12
## 13                Idaho   13    13
## 14             Nebraska   14    28
## 15        West Virginia   15    49
## 16           New Mexico   16    32
## 17               Nevada   17    29
## 18                 Utah   18    45
## 19               Kansas   19    17
## 20             Arkansas   20     4
## 21          Mississippi   21    25
## 22                 Iowa   22    16
## 23          Connecticut   23     7
## 24             Oklahoma   24    37
## 25               Oregon   25    38
## 26             Kentucky   26    18
## 27            Louisiana   27    19
## 28       South Carolina   28    41
## 29              Alabama   29     1
## 30             Colorado   30     6
## 31            Minnesota   31    24
## 32            Wisconsin   32    50
## 33             Maryland   33    21
## 34             Missouri   34    26
```

```
## 35            Tennessee   35    43
## 36              Arizona   36     3
## 37              Indiana   37    15
## 38        Massachusetts   38    22
## 39           Washington   39    48
## 40             Virginia   40    47
## 41           New Jersey   41    31
## 42       North Carolina   42    34
## 43             Michigan   43    23
## 44              Georgia   44    11
## 45                 Ohio   45    36
## 46         Pennsylvania   46    39
## 47             Illinois   47    14
## 48             New York   48    33
## 49              Florida   49    10
## 50                Texas   50    44
## 51           California   51     5
```

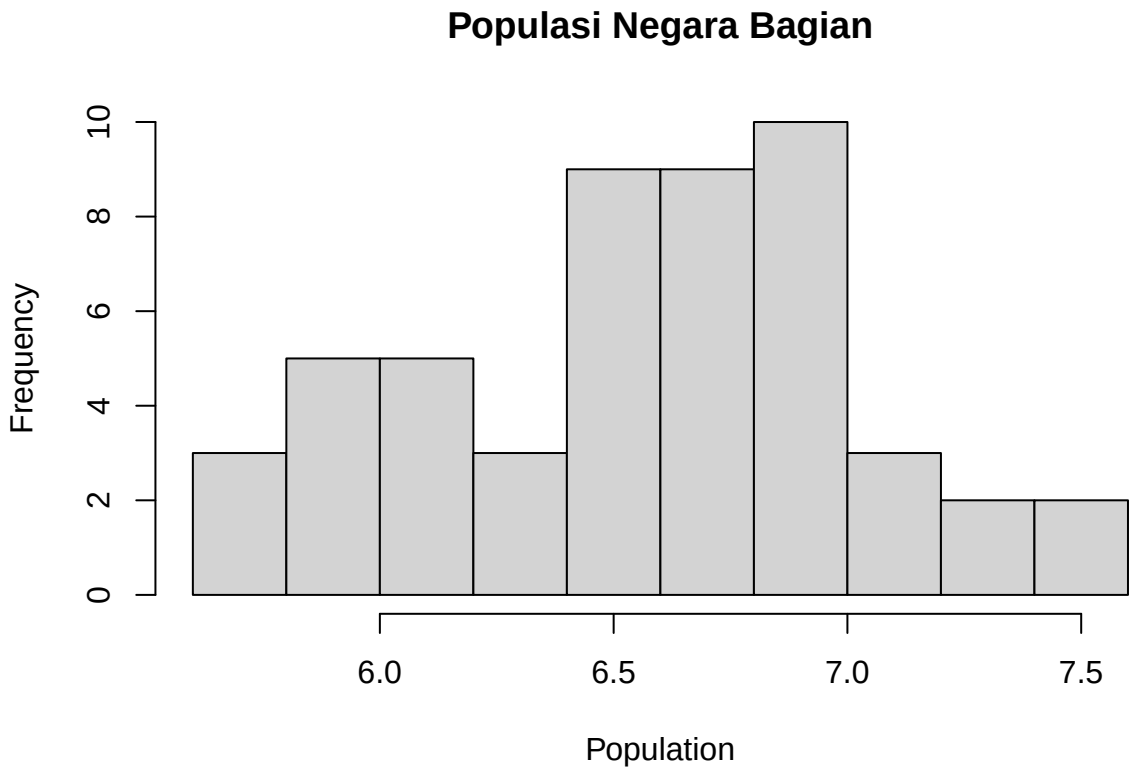
7.

```
population_in_milion <- log10(murders$population)
total_gun_murders <- murders$total
plot(population_in_milion, total_gun_murders)
```



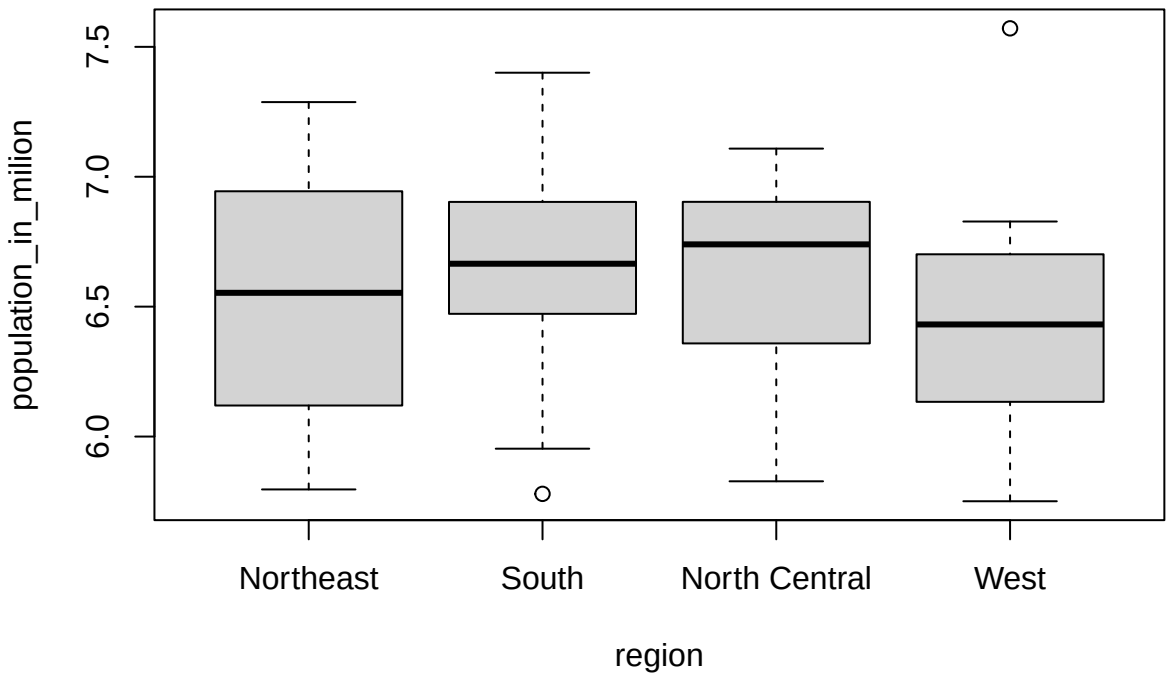
8.

```
hist(population_in_milion, main = "Populasi Negara Bagian", xlab
= "Population")
```



9.

```
boxplot(population_in_milion~region, data = murders)
```


population_in_milion
6.0
6.5
7.0
7.5
Northeast
South
North Central
West
region