AbinShrestha_Rollno1

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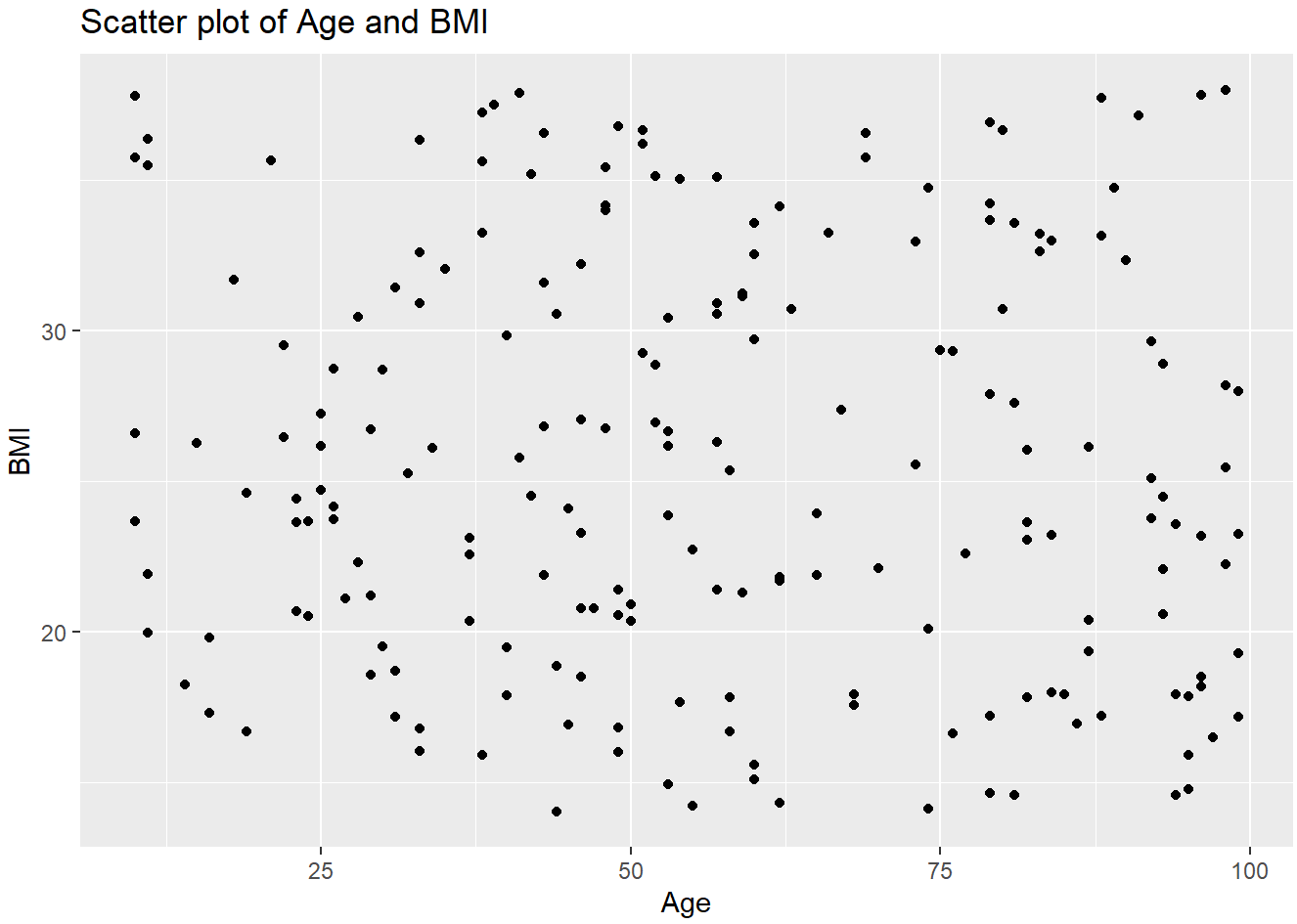
Question no 6

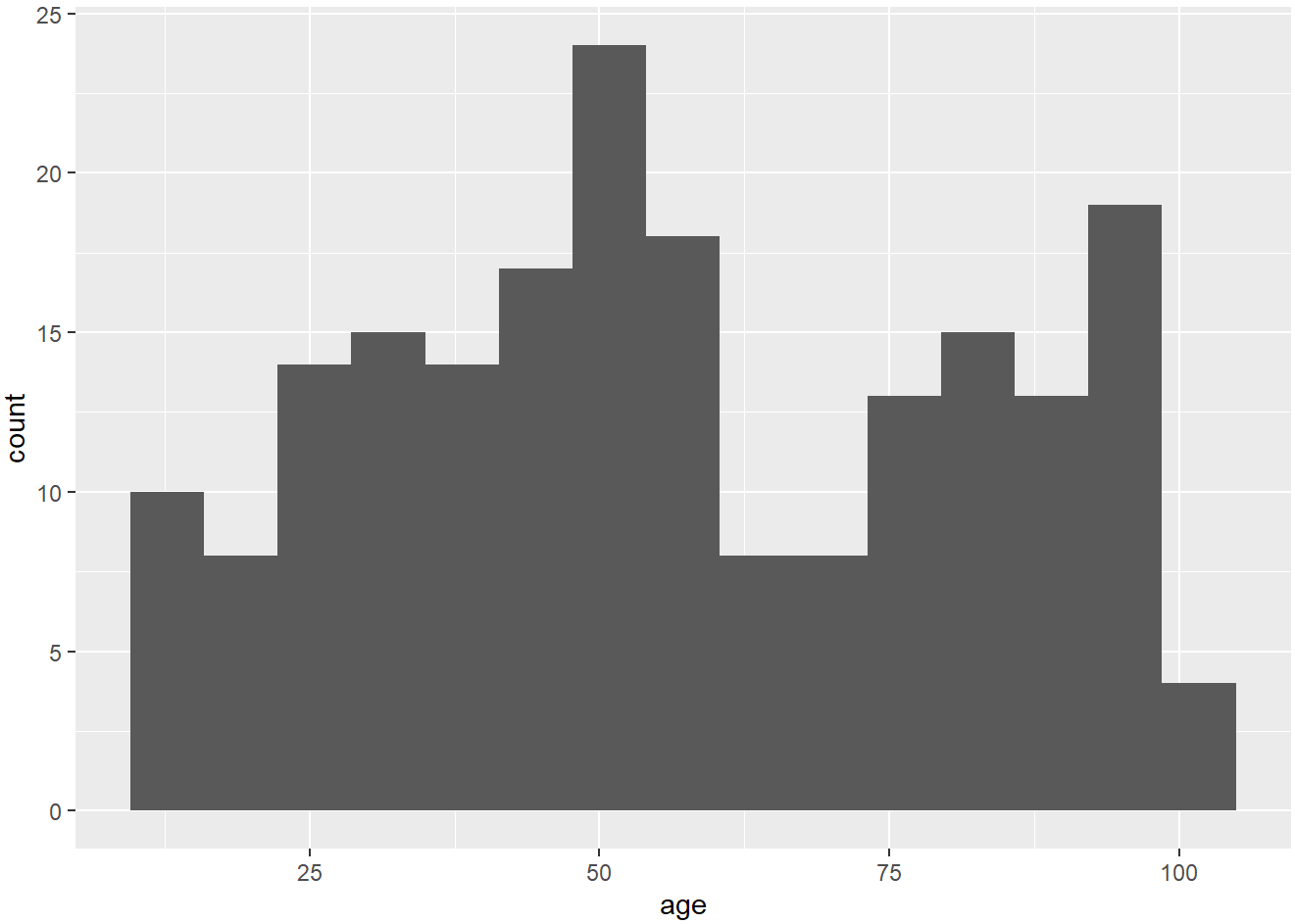
```
# 6a
set.seed(1)

n <- 200
age <- sample(10:99, n, replace = TRUE)
sex <- sample(c("male", "female"), n, replace = TRUE)
education <- sample(c("No education", "Primary", "Secondary", "Beyond secondary"), n, replace
= TRUE)
socio_economic <- sample(c("Low", "Middle", "High"), n, replace = TRUE)
bmi <- runif(n, min = 14, max = 38)

my_dataset <- data.frame(age, sex, education, socio_economic, bmi)



# 6b
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 4.3.3
```

```
ggplot(my_dataset, aes(x = age,y=bmi)) +
  geom_point() +
  labs(title = "Scatter plot of Age and BMI", x = "Age", y = "BMI")
```




```
# 6d

ggplot(my_dataset,mapping=aes(age))+(geom_histogram(bins = 15))
```

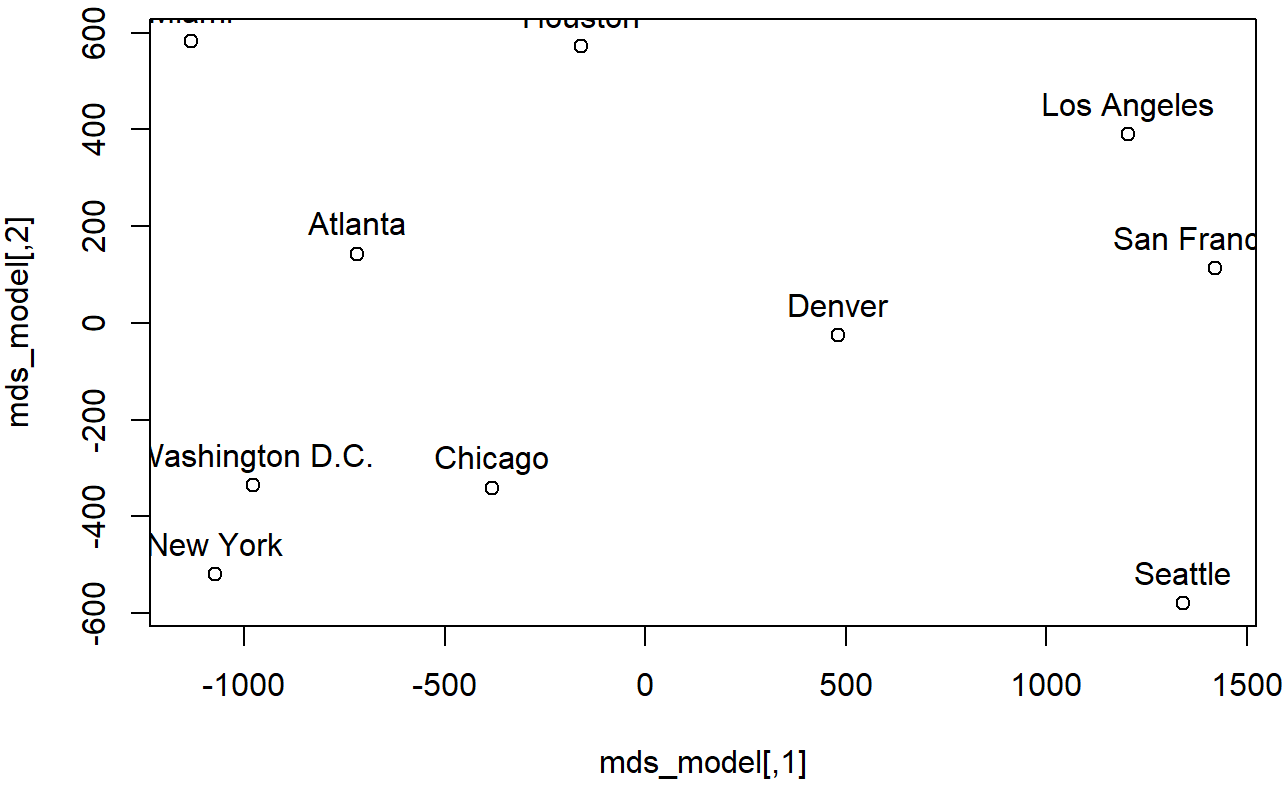


Question no 9

```r
# Question no  9
library(stats)

distance <- matrix(c(
  0, 587, 1212, 701, 1936, 604, 748, 2139, 2182, 543,
  587, 0, 920, 940, 1745, 1188, 713, 1858, 1737, 597,
  1212, 920, 0, 879, 831, 1726, 1631, 949, 1021, 1494,
  701, 940, 879, 0, 1374, 968, 1420, 1645, 1891, 1220,
  1936, 1745, 831, 1374, 0, 2339, 2451, 347, 959, 2300,
  604, 1188, 1726, 968, 2339, 0, 1092, 2594,2734 , 923,
  748, 713, 1631, 1420, 2451, 1092, 0, 2571, 2408, 205,
  2139, 1858, 949, 1645, 347, 2594, 2571, 0, 678, 2442,
  2182, 1737, 1021, 1891, 959, 2734, 2408, 678, 0, 2329,
  543, 597, 1494, 1220, 2300, 923, 205, 2442, 2329, 0
), nrow = 10, byrow = TRUE)

names <- c("Atlanta", "Chicago", "Denver", "Houston", "Los Angeles", "Miami",
                "New York", "San Francisco", "Seattle", "Washington D.C.")


# 9a

city.dissimilarity <- as.dist(distance)

# 9b

mds_model <- cmdscale(city.dissimilarity)


# 9c

summary(mds_model)
```

```
##        V1                V2
##  Min.   :-1133.5   Min.   :-579.74
##  1st Qu.: -914.4   1st Qu.:-339.50
##  Median : -271.8   Median :  43.65
##  Mean   :    0.0   Mean   :   0.00
##  3rd Qu.: 1023.2   3rd Qu.: 328.32
##  Max.   : 1420.6   Max.   : 581.91
```

```r
# 9d

plot(mds_model)
text(mds_model ,pos=3,labels = names)
```


Houston
Los Angeles
Atlanta
San Franc
Denver
Washington D.C.
Chicago
New York
Seattle
600
400
200
0
-200
-400
-600
-1000
-500
0
500
1000
1500
mds_model[,2]
mds_model[,1]