American International University-Bangladesh (AIUB)

Department of Computer Science and Engineering (CSE)
Faculty of Science & Technology (FST)
Spring 2022-23

Course: Introduction to Data Science

Course Code: CSC 4180

Section: E

Mid Term Project

Submitted by:

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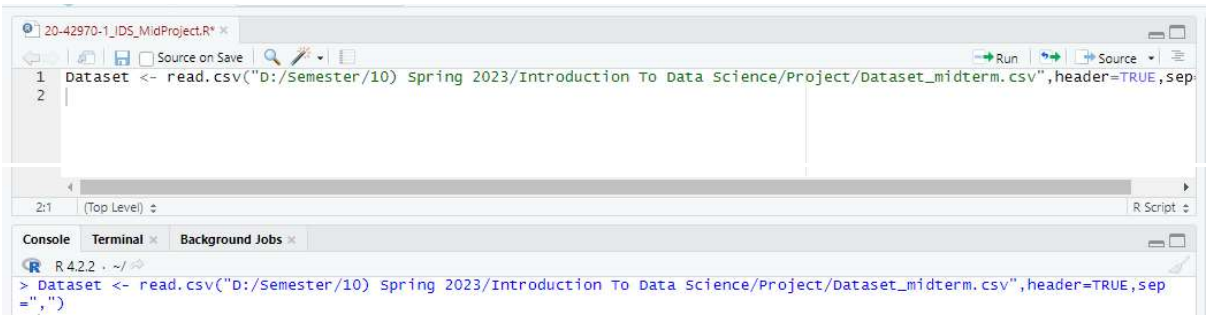
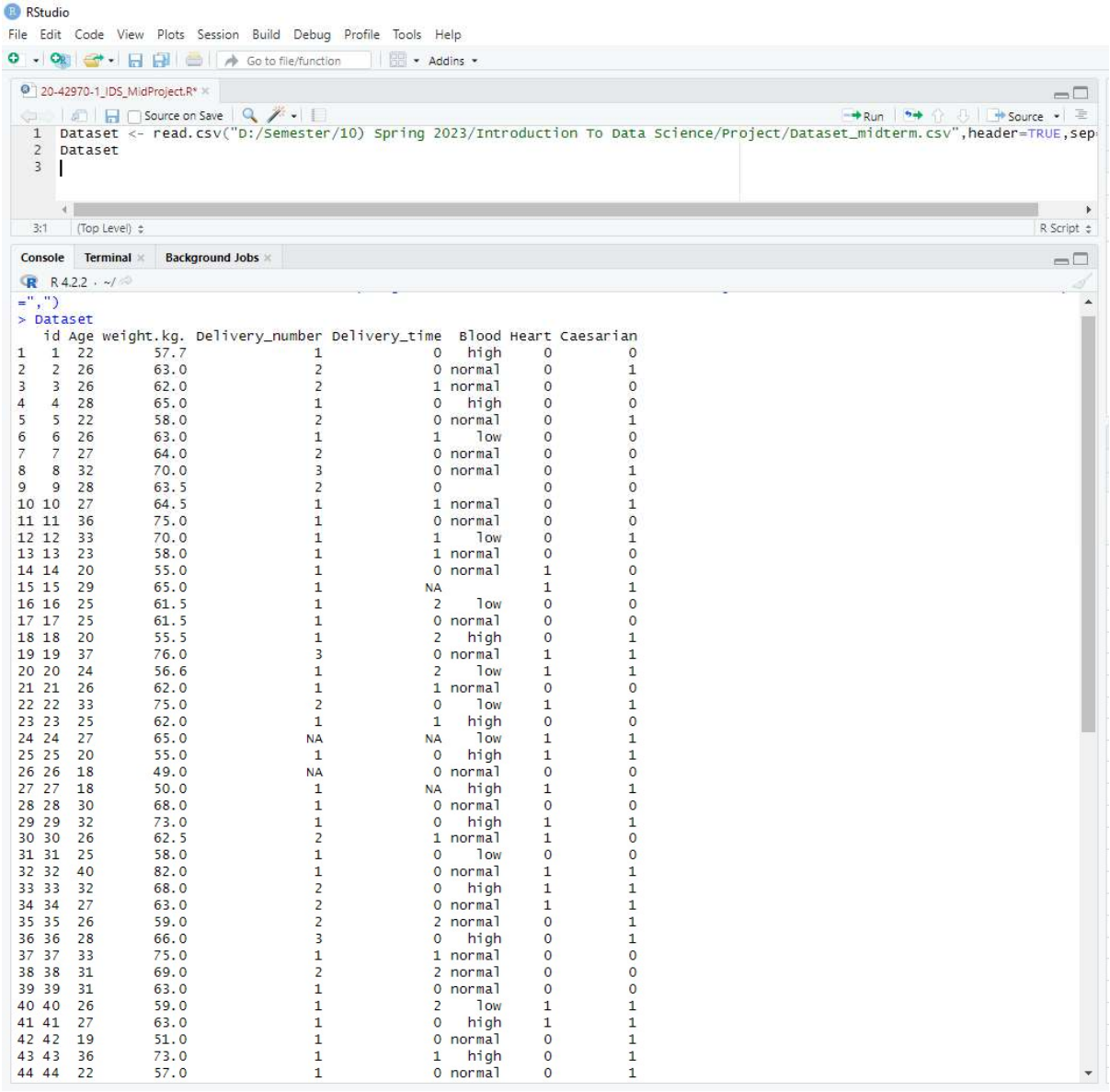
1) Import the Data Set

Dataset <- read.csv("D:/Semester/10) Spring 2023/Introduction To Data Science/Project/Dataset_midterm.csv",header=TRUE,sep=",")



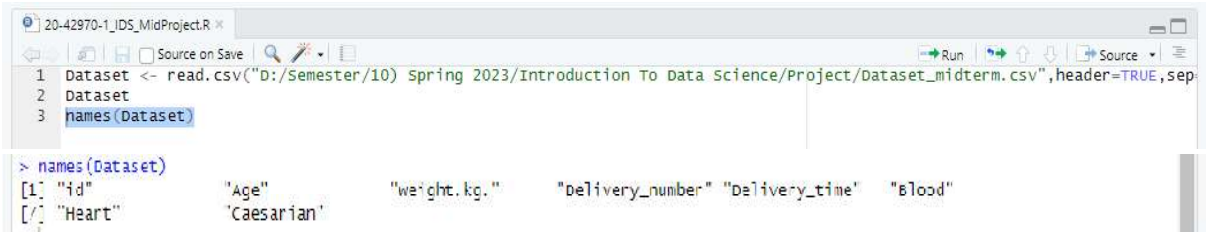
2) Print the Data Set

Dataset



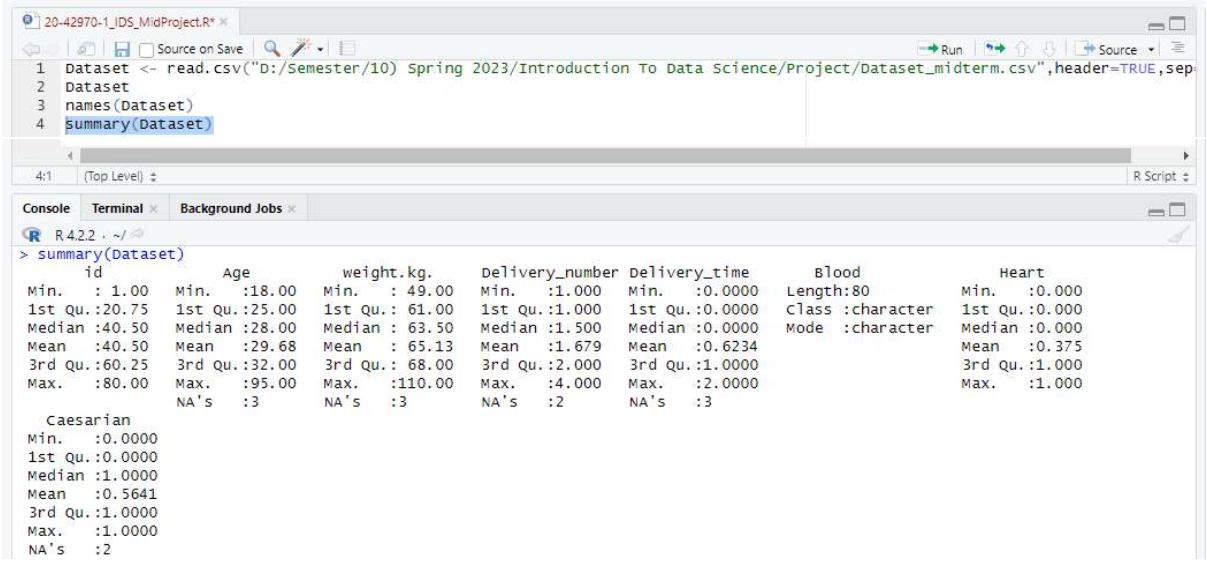
3) Show The Attributes Name from the Data Set

names(Dataset)



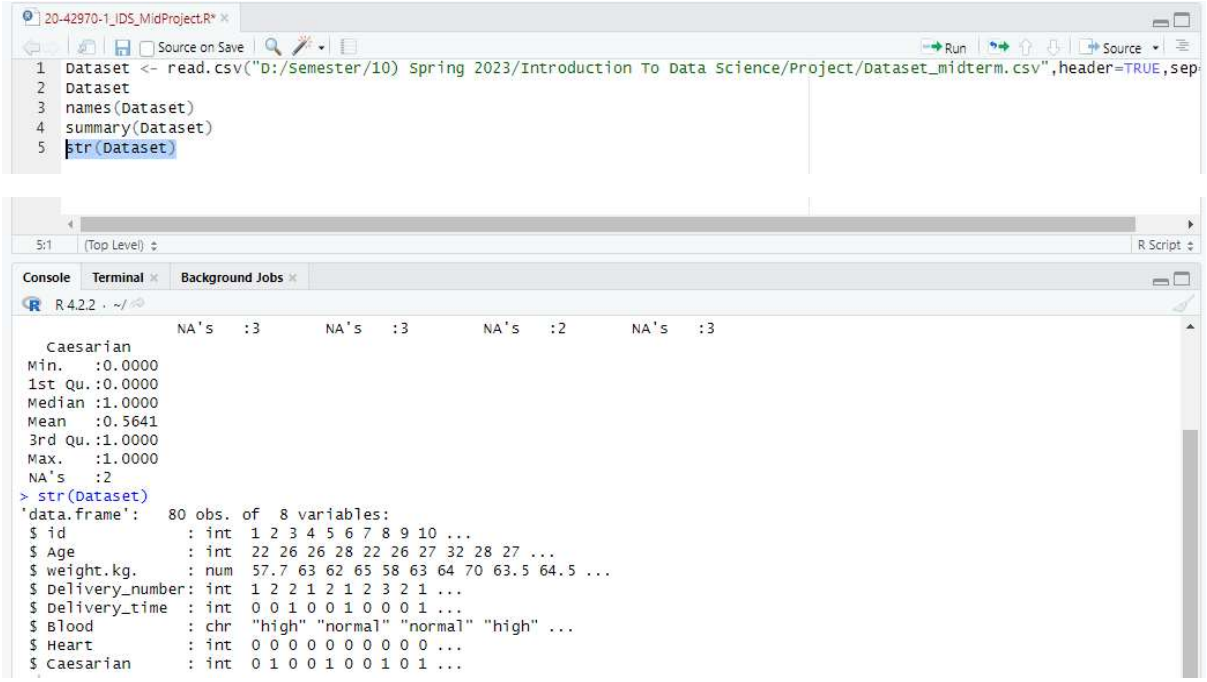
4) Summary of every attribute from the Data Set

summary(Dataset)



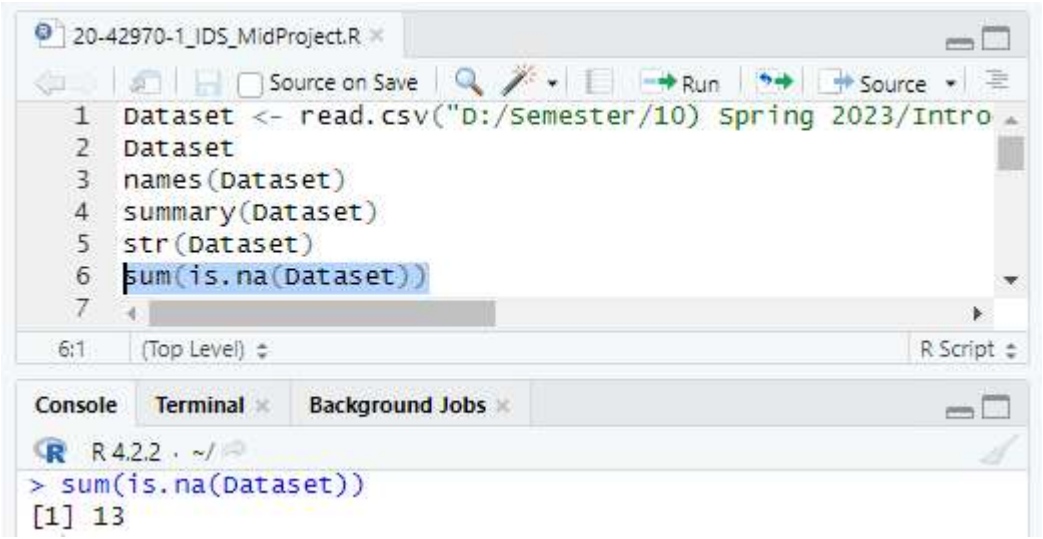
5) Find all types of data from a Data Set

str(Dataset)



6) Show the Sum of The Data Set

sum(is.na(Dataset))



7) Show the Types of Data for All Attributes.

mode(Dataset$id)

mode(Dataset$Age)

mode(Dataset$weight.kg.)

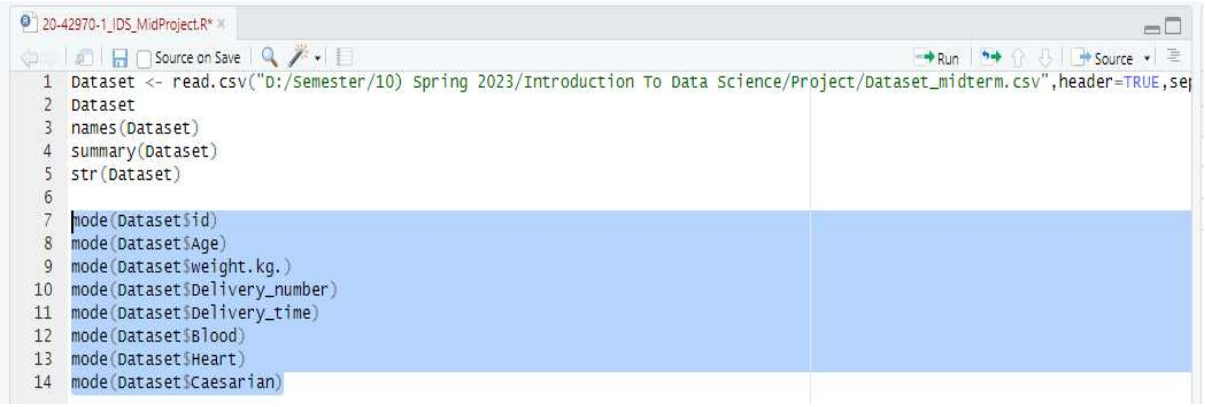
mode(Dataset$Delivery_number)

mode(Dataset$Delivery_time)

mode(Dataset$Blood)

mode(Dataset$Heart)

mode(Dataset$Caesarian)



```
 $ Blood          : chr  "high" "normal" "normal" "high" ...
 $ Heart          : int  0 0 0 0 0 0 0 0 0 0 ...
 $ Caesarian      : int  0 1 0 0 1 0 0 1 0 1 ...
> mode(Dataset$id)
[1] "numeric"
> mode(Dataset$Age)
[1] "numeric"
> mode(Dataset$weight.kg.)
[1] "numeric"
> mode(Dataset$Delivery_number)
[1] "numeric"
> mode(Dataset$Delivery_time)
[1] "numeric"
> mode(Dataset$Blood)
[1] "character"
> mode(Dataset$Heart)
[1] "numeric"
> mode(Dataset$Caesarian)
[1] "numeric"
```

8) Compute the mean and median value of the Heart

meanHeart = mean(Dataset$Heart)

print(meanHeart)

medianHeart = median(Dataset$Heart)

print(medianHeart)

```
20-42970-1_IDS_MidProject.R*
Source on Save
 1  Dataset <- read.csv("D:/Semester/10
 2  Dataset
 3  names(Dataset)
 4  summary(Dataset)
 5  str(Dataset)
 6
 7  mode(Dataset$id)
 8  mode(Dataset$Age)
 9  mode(Dataset$weight.kg.)
10  mode(Dataset$Delivery_number)
11  mode(Dataset$Delivery_time)
12  mode(Dataset$Blood)
13  mode(Dataset$Heart)
14  mode(Dataset$Caesarian)
15
16  meanHeart = mean(Dataset$Heart)
17  print(meanHeart)
18
19  medianHeart = median(Dataset$Heart)
20  print(medianHeart)
```

```
19:1  (Top Level)
Console  Terminal  Background Jobs
R 4.2.2 · ~/
> meanHeart = mean(Dataset$Heart)
> print(meanHeart)
[1] 0.375
> medianHeart = median(Dataset$Heart)
> print(medianHeart)
[1] 0
```

names(sort(table(Dataset$weight.kg.)))

names(sort(table(Dataset$Blood)))

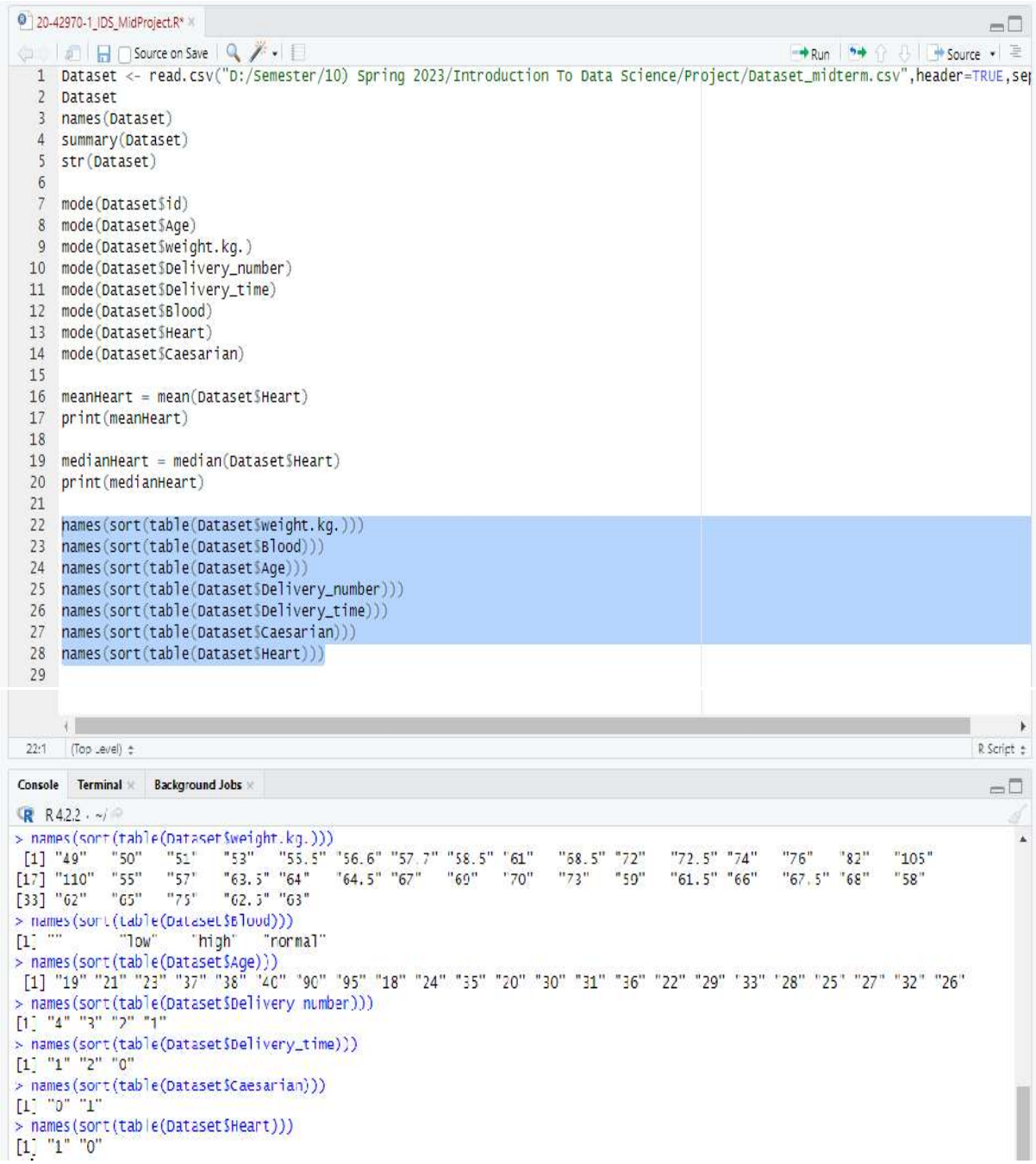
names(sort(table(Dataset$Age)))

names(sort(table(Dataset$Delivery_number)))

names(sort(table(Dataset$Delivery_time)))

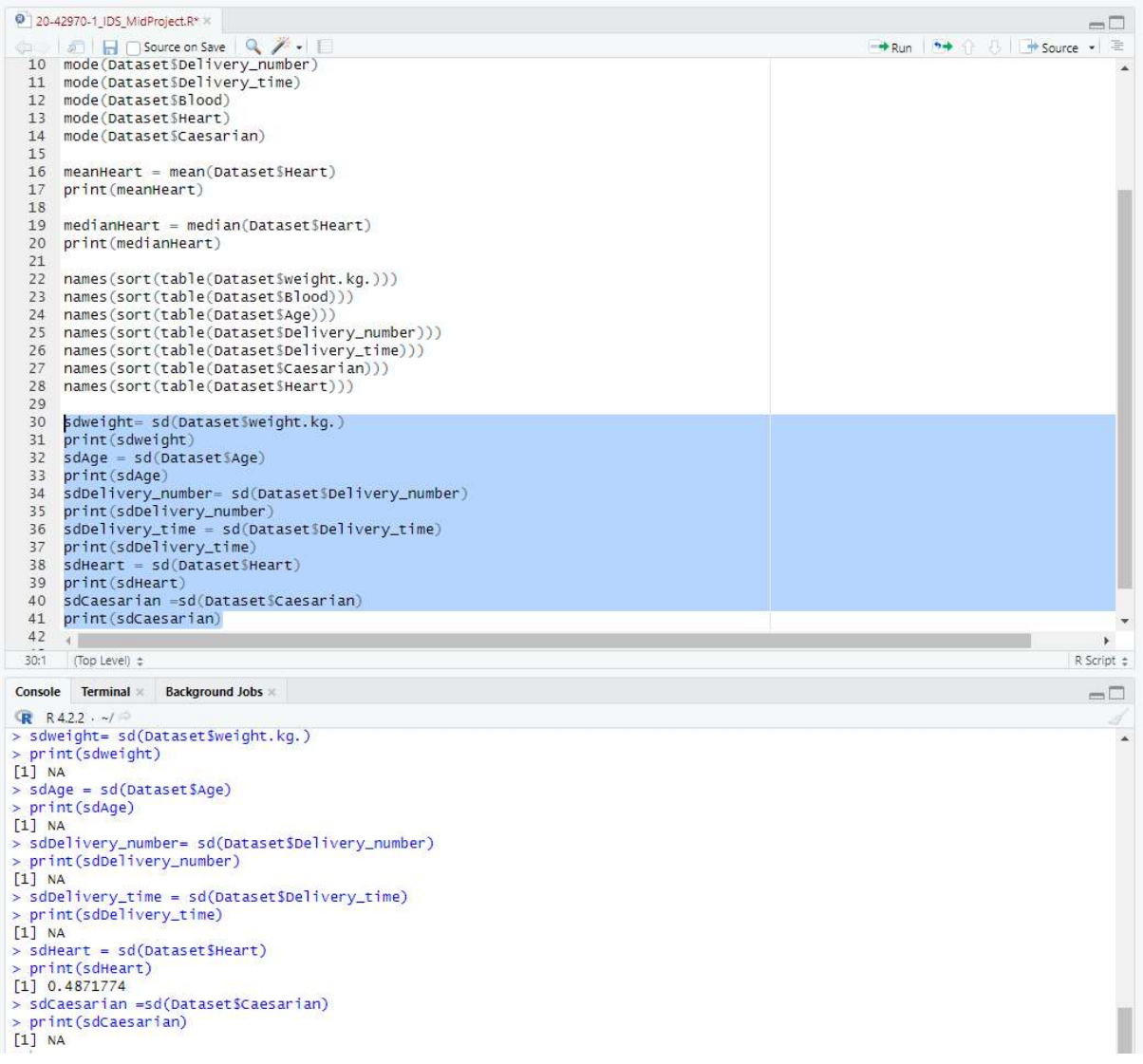
names(sort(table(Dataset$Caesarian)))

names(sort(table(Dataset$Heart)))



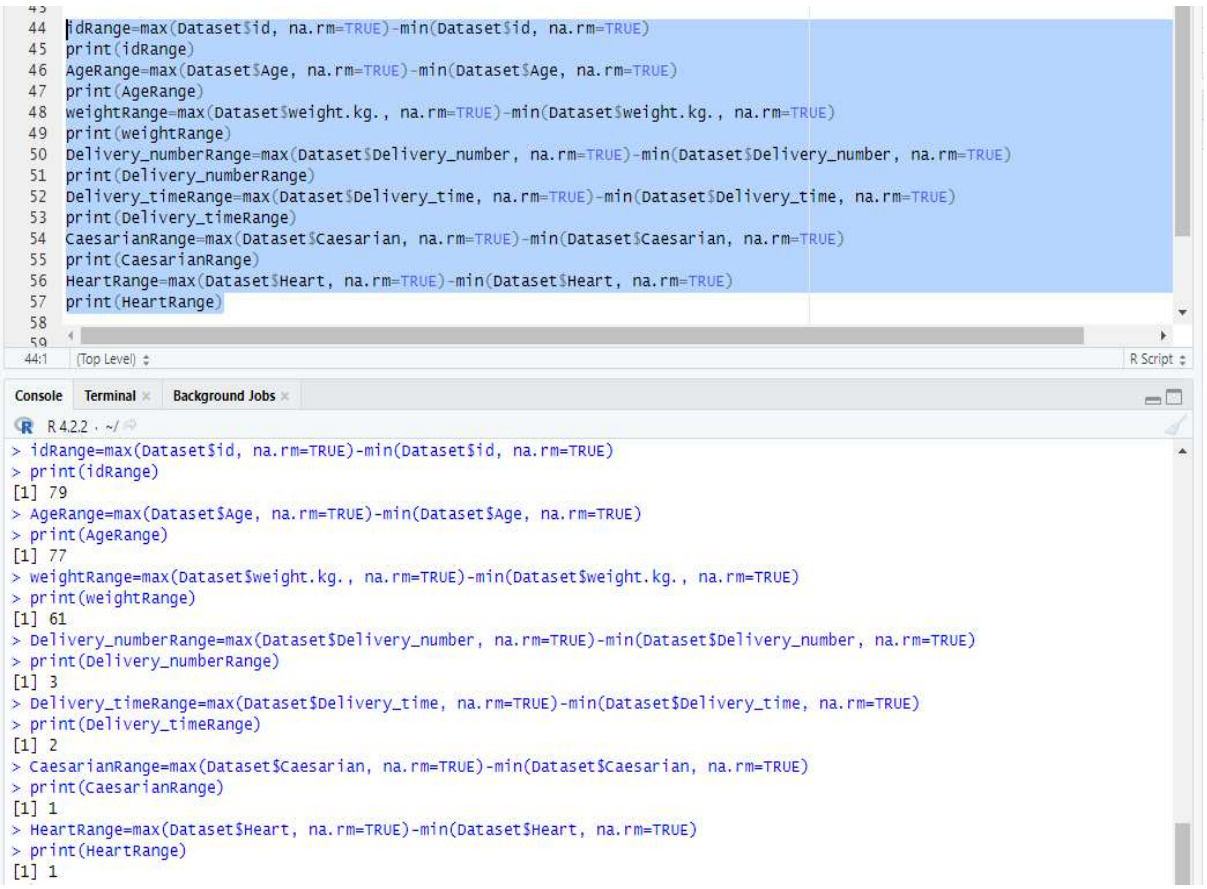
9) Show the Standard Deviation of all attributes.

```
sdweight= sd(Dataset$weight.kg.)
print(sdweight)
sdAge = sd(Dataset$Age)
print(sdAge)
sdDelivery_number= sd(Dataset$Delivery_number)
print(sdDelivery_number)
sdDelivery_time = sd(Dataset$Delivery_time)
print(sdDelivery_time)
sdHeart = sd(Dataset$Heart)
print(sdHeart)
sdCaesarian =sd(Dataset$Caesarian)
print(sdCaesarian)
```



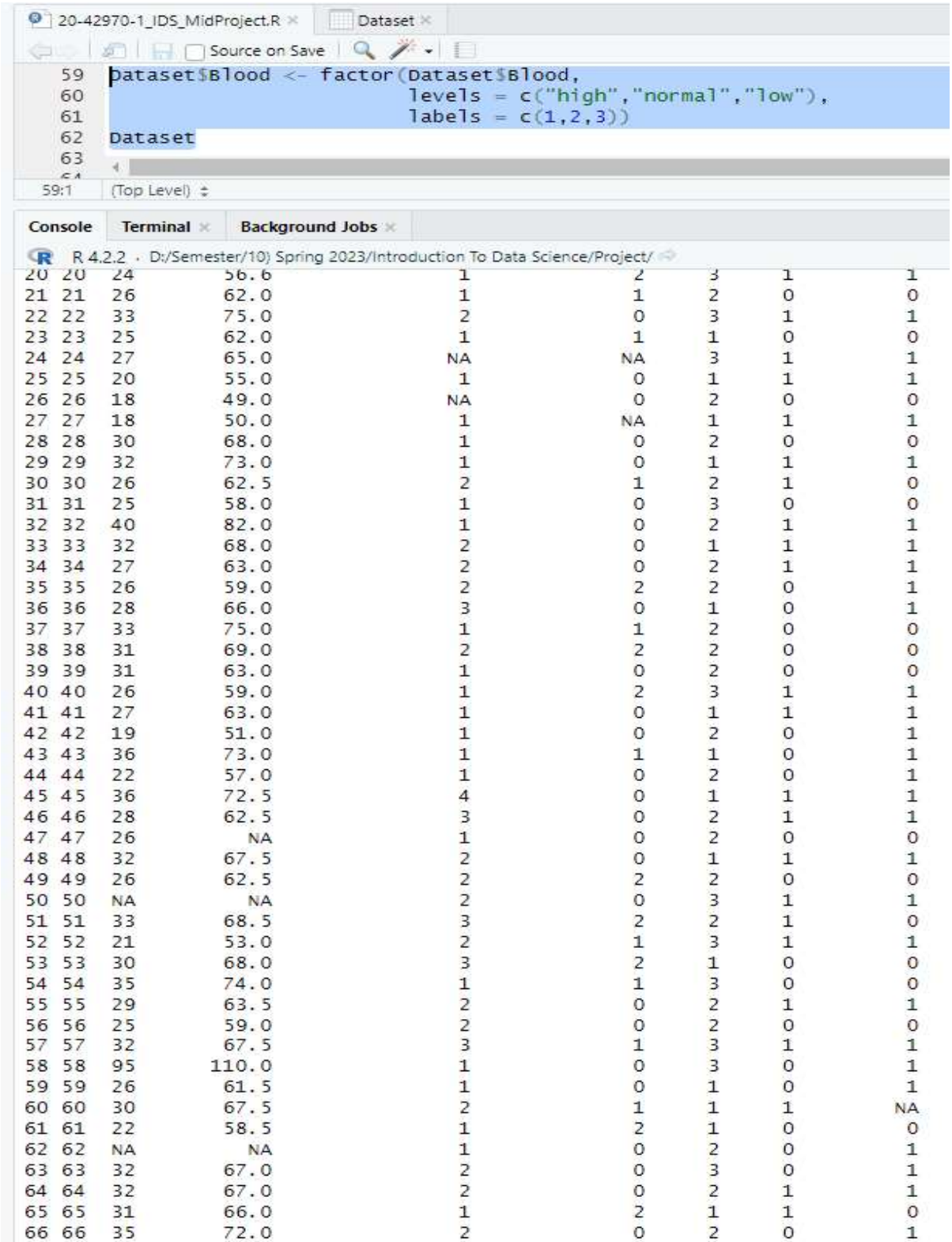
10) Show the range of all attributes.

```
idRange=max(Dataset$id, na.rm=TRUE)-min(Dataset$id, na.rm=TRUE)

print(idRange)

AgeRange=max(Dataset$Age, na.rm=TRUE)-min(Dataset$Age, na.rm=TRUE)

print(AgeRange)

weightRange=max(Dataset$weight.kg., na.rm=TRUE)-min(Dataset$weight.kg., na.rm=TRUE)

print(weightRange)

Delivery_numberRange=max(Dataset$Delivery_number, na.rm=TRUE)-
min(Dataset$Delivery_number, na.rm=TRUE)

print(Delivery_numberRange)

Delivery_timeRange=max(Dataset$Delivery_time, na.rm=TRUE)-min(Dataset$Delivery_time,
na.rm=TRUE)

print(Delivery_timeRange)

CaesarianRange=max(Dataset$Caesarian, na.rm=TRUE)-min(Dataset$Caesarian, na.rm=TRUE)

print(CaesarianRange)

HeartRange=max(Dataset$Heart, na.rm=TRUE)-min(Dataset$Heart, na.rm=TRUE)

print(HeartRange)
```



11) Annotate high as 1, normal as 2, and low as 3 from the Blood attribute.

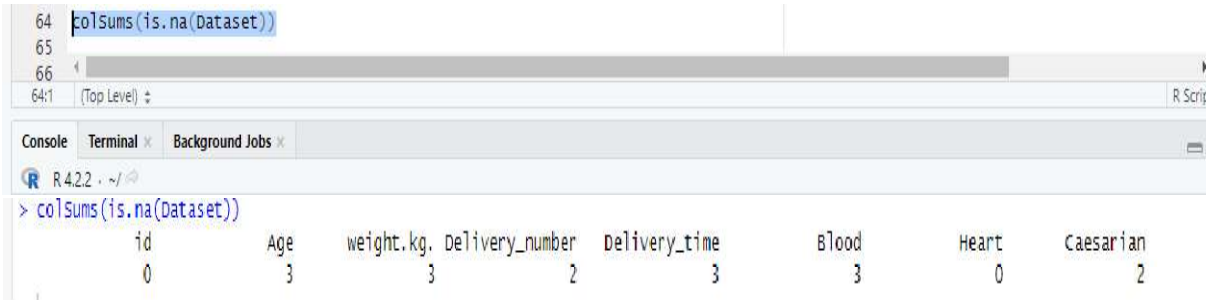
```
Dataset$Blood <- factor(Dataset$Blood,
                        levels = c("high","normal","low"),
                        labels = c(1,2,3))
Dataset
```



20	20	24	56.6	1	2	3	1	1
21	21	26	62.0	1	1	2	0	0
22	22	33	75.0	2	0	3	1	1
23	23	25	62.0	1	1	1	0	0
24	24	27	65.0	NA	NA	3	1	1
25	25	20	55.0	1	0	1	1	1
26	26	18	49.0	NA	0	2	0	0
27	27	18	50.0	1	NA	1	1	1
28	28	30	68.0	1	0	2	0	0
29	29	32	73.0	1	0	1	1	1
30	30	26	62.5	2	1	2	1	0
31	31	25	58.0	1	0	3	0	0
32	32	40	82.0	1	0	2	1	1
33	33	32	68.0	2	0	1	1	1
34	34	27	63.0	2	0	2	1	1
35	35	26	59.0	2	2	2	0	1
36	36	28	66.0	3	0	1	0	1
37	37	33	75.0	1	1	2	0	0
38	38	31	69.0	2	2	2	0	0
39	39	31	63.0	1	0	2	0	0
40	40	26	59.0	1	2	3	1	1
41	41	27	63.0	1	0	1	1	1
42	42	19	51.0	1	0	2	0	1
43	43	36	73.0	1	1	1	0	1
44	44	22	57.0	1	0	2	0	1
45	45	36	72.5	4	0	1	1	1
46	46	28	62.5	3	0	2	1	1
47	47	26	NA	1	0	2	0	0
48	48	32	67.5	2	0	1	1	1
49	49	26	62.5	2	2	2	0	0
50	50	NA	NA	2	0	3	1	1
51	51	33	68.5	3	2	2	1	0
52	52	21	53.0	2	1	3	1	1
53	53	30	68.0	3	2	1	0	0
54	54	35	74.0	1	1	3	0	0
55	55	29	63.5	2	0	2	1	1
56	56	25	59.0	2	0	2	0	0
57	57	32	67.5	3	1	3	1	1
58	58	95	110.0	1	0	3	0	1
59	59	26	61.5	1	0	1	0	1
60	60	30	67.5	2	1	1	1	NA
61	61	22	58.5	1	2	1	0	0
62	62	NA	NA	1	0	2	0	1
63	63	32	67.0	2	0	3	0	1
64	64	32	67.0	2	0	2	1	1
65	65	31	66.0	1	2	1	1	0
66	66	35	72.0	2	0	2	0	1

12) Find the Missing Value for All Attributes.

colSums(is.na(Dataset))



13) Find the Specific Row Number of Null Values of Age, Weight, Delivery Number, Delivery Time and Caesarian.

which(is.na(Dataset$Age))

which(is.na(Dataset$weight.kg.))

which(is.na(Dataset$Delivery_number))

which(is.na(Dataset$Delivery_time))

which(is.na(Dataset$Blood))

which(is.na(Dataset$Caesarian))

14) Detect the Outlier as a Missing Value.

Dataset$missing_value= is.na(Dataset$Age) | is.na(Dataset$weight.kg.) | is.na(Dataset$Delivery_number) | is.na(Dataset$Delivery_time) | is.na(Dataset$Blood) | is.na(Dataset$Caesarian)

Dataset

```
73  Dataset$missing_value= is.na(Dataset$Age) | is.na(Dataset$weight.kg.) | is.na(Dataset$Delivery_number) | is.na(Dataset$Delivery_t
74  Dataset
75  Data= filter(Dataset,Dataset$missing_value !=FALSE)
76
77
```

```
> Dataset$missing_value= is.na(Dataset$Age) | is.na(Dataset$weight.kg.) | is.na(Dataset$Delivery_number) | is.na(Dataset$Delivery_tim
e) | is.na(Dataset$Blood)  | is.na(Dataset$Caesarian)
> Dataset
   id Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1  22       57.7               1             0     1     0         0         FALSE
2   2  26       63.0               2             0     2     0         1         FALSE
3   3  26       62.0               2             1     2     0         0         FALSE
4   4  28       65.0               1             0     1     0         0         FALSE
5   5  22       58.0               2             0     2     0         1         FALSE
6   6  26       63.0               1             1     3     0         0         FALSE
7   7  27       64.0               2             0     2     0         0         FALSE
8   8  32       70.0               3             0     2     0         1         FALSE
9   9  28       63.5               2             0  <NA>     0         0          TRUE
10 10  27       64.5               1             1     2     0         1         FALSE
11 11  36       75.0               1             0     2     0         0         FALSE
12 12  33       70.0               1             1     3     0         1         FALSE
13 13  23       58.0               1             1     2     0         0         FALSE
14 14  20       55.0               1             0     2     1         0         FALSE
15 15  29       65.0               1            NA  <NA>     1         1          TRUE
16 16  25       61.5               1             2     3     0         0         FALSE
17 17  25       61.5               1             0     2     0         0         FALSE
18 18  20       55.5               1             2     1     0         1         FALSE
19 19  37       76.0               3             0     2     1         1         FALSE
20 20  24       56.6               1             2     3     1         1         FALSE
21 21  26       62.0               1             1     2     0         0         FALSE
22 22  33       75.0               2             0     3     1         1         FALSE
23 23  25       62.0               1             1     1     0         0         FALSE
24 24  27       65.0              NA            NA     3     1         1          TRUE
25 25  20       55.0               1             0     1     1         1         FALSE
26 26  18       49.0              NA             0     2     0         0          TRUE
27 27  18       50.0               1            NA     1     1         1          TRUE
28 28  30       68.0               1             0     2     0         0         FALSE
29 29  32       73.0               1             0     1     1         1         FALSE
30 30  26       62.5               2             1     2     1         0         FALSE
```

Data= filter(Dataset,Dataset$missing_value !=FALSE)

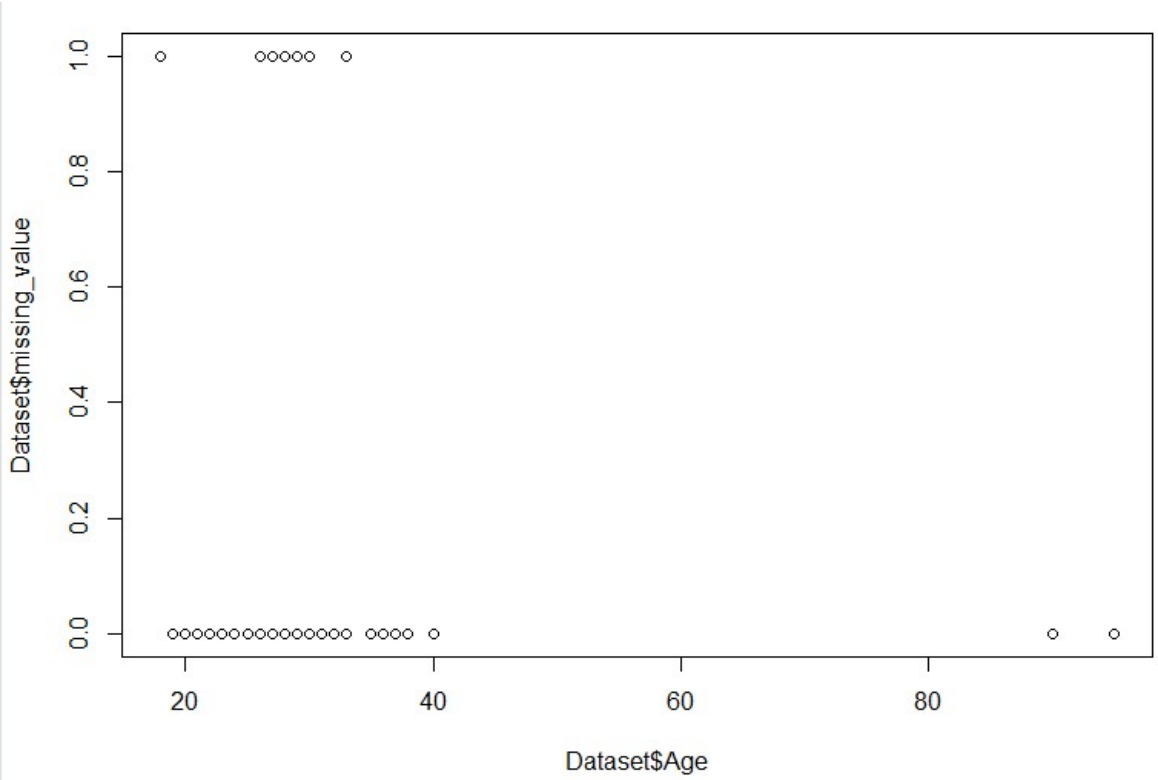
plot(Dataset$Age,Dataset$missing_value)

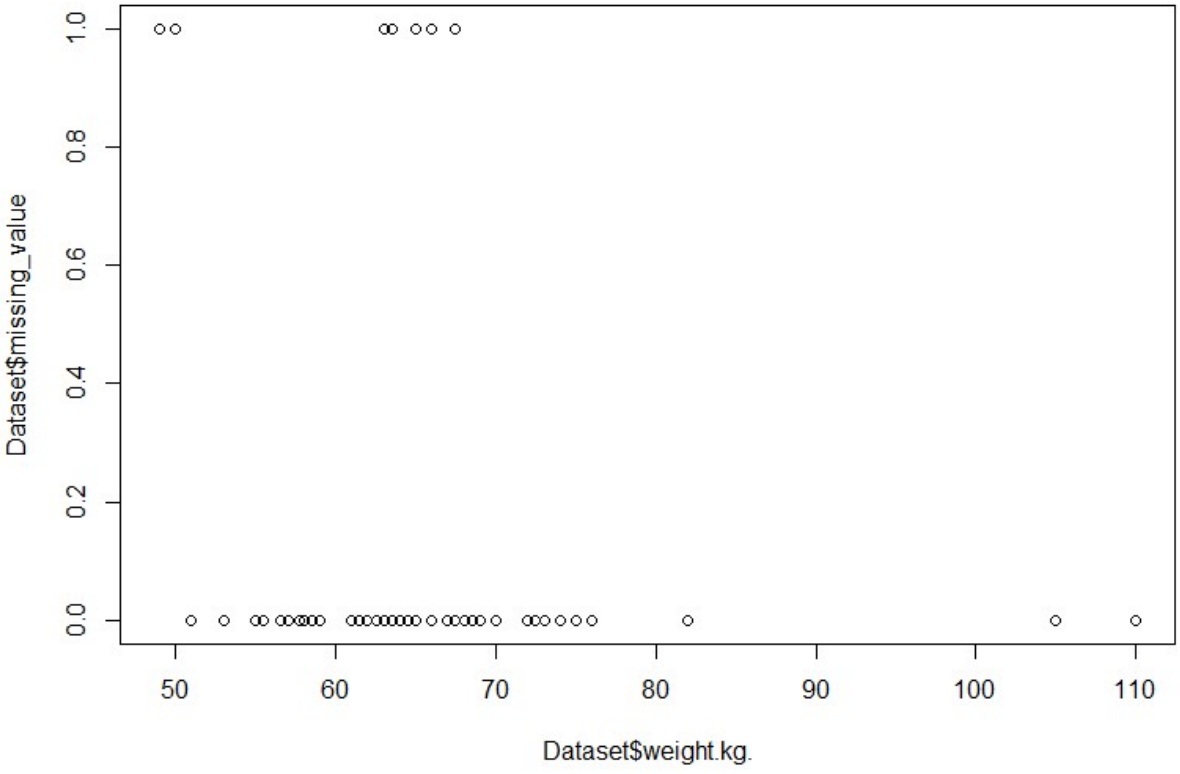
plot(Dataset$weight.kg.,Dataset$missing_value)

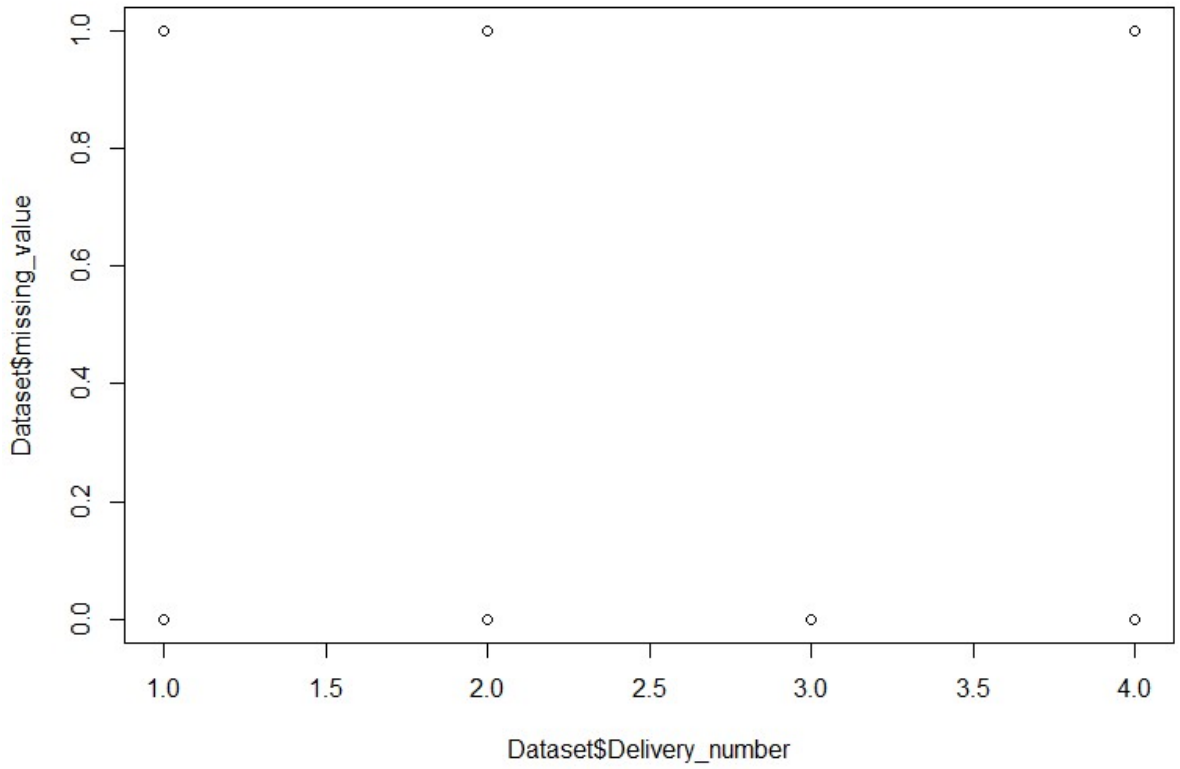
plot(Dataset$Delivery_number,Dataset$missing_value)

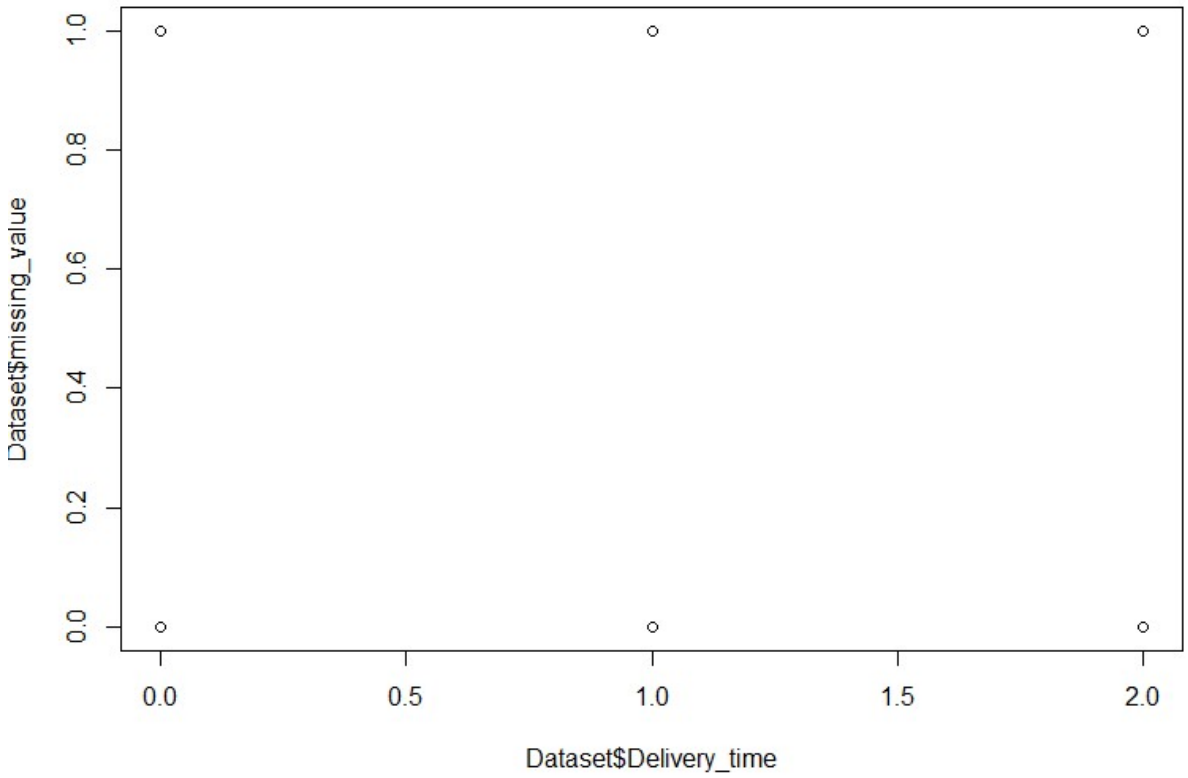
plot(Dataset$Delivery_number,Dataset$Blood)

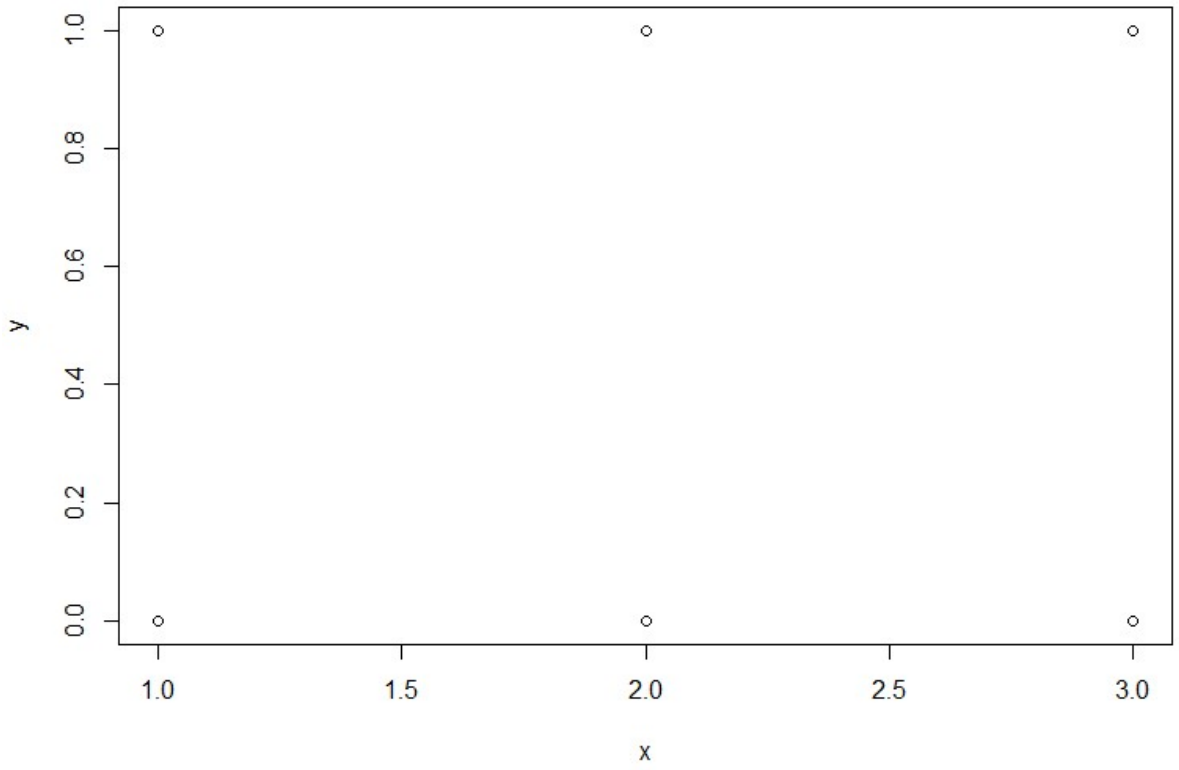
plot(Dataset$Caesarian,Dataset$missing_value)

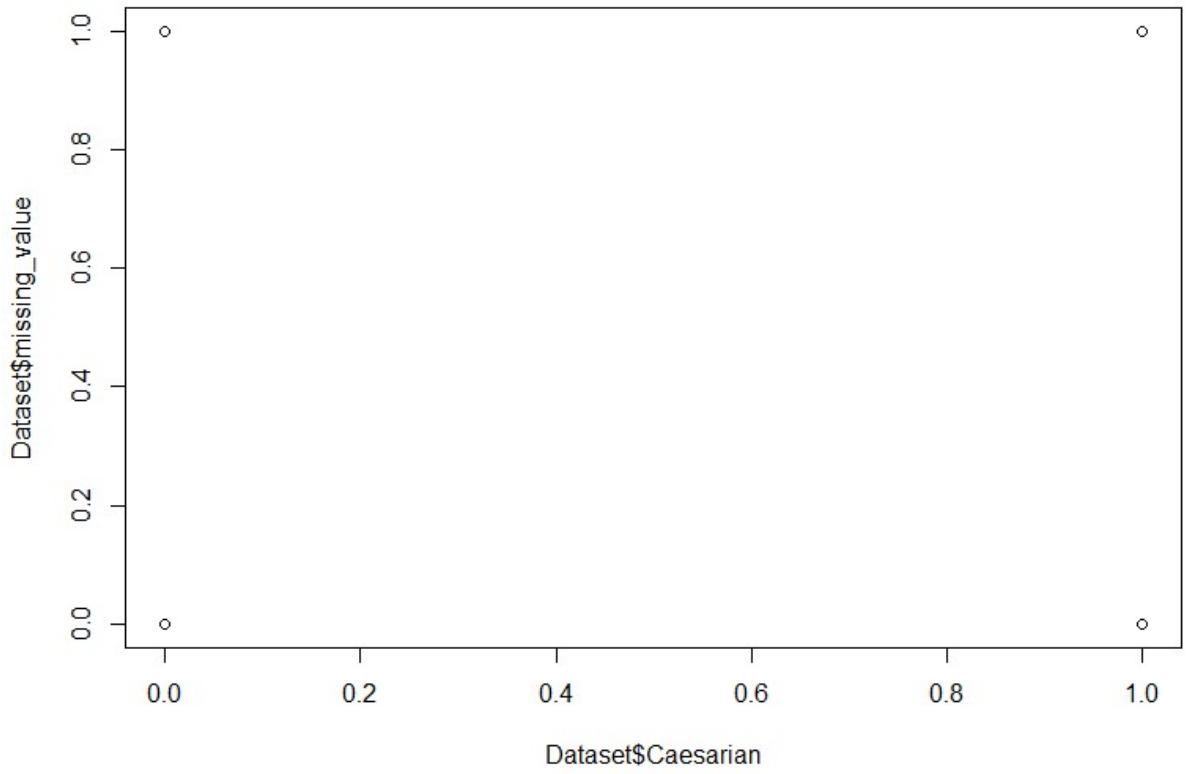

Dataset$missing_value
0.0
0.2
0.4
0.6
0.8
1.0
20
40
60
80
Dataset$Age


Dataset$missing_value
0.0
0.2
0.4
0.6
0.8
1.0
50
60
70
80
90
100
110
Dataset$weight.kg.


Dataset$missing_value
0.0
0.2
0.4
0.6
0.8
1.0
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Dataset$Delivery_number


Dataset$missing_value
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.5
1.0
1.5
2.0
Dataset$Delivery_time


y
1.0
0.8
0.6
0.4
0.2
0.0
1.0
1.5
2.0
2.5
3.0
x


Dataset$missing_value
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
Dataset$Caesarian

15) Recover missing values by the following strategies for Age, Weight, Delivery Number, Delivery Time, Blood, and Caesarian attributes.

I. Recover missing values with the mean value.

meanvalueAge <-mean(Dataset$Age,na.rm=TRUE)

meanvalueAge

Dataset[is.na(Dataset$Age), "Age"] <-meanvalueAge

Dataset

```
93  meanvalueAge <-mean(Dataset$Age,na.rm=TRUE)
94  meanvalueAge
95  Dataset[is.na(Dataset$Age), "Age"] <-meanvalueAge
96  Dataset
97
98
99
93:1  (Top Level)
```

Console | Terminal | Background Jobs

R 4.2.2 · ~/

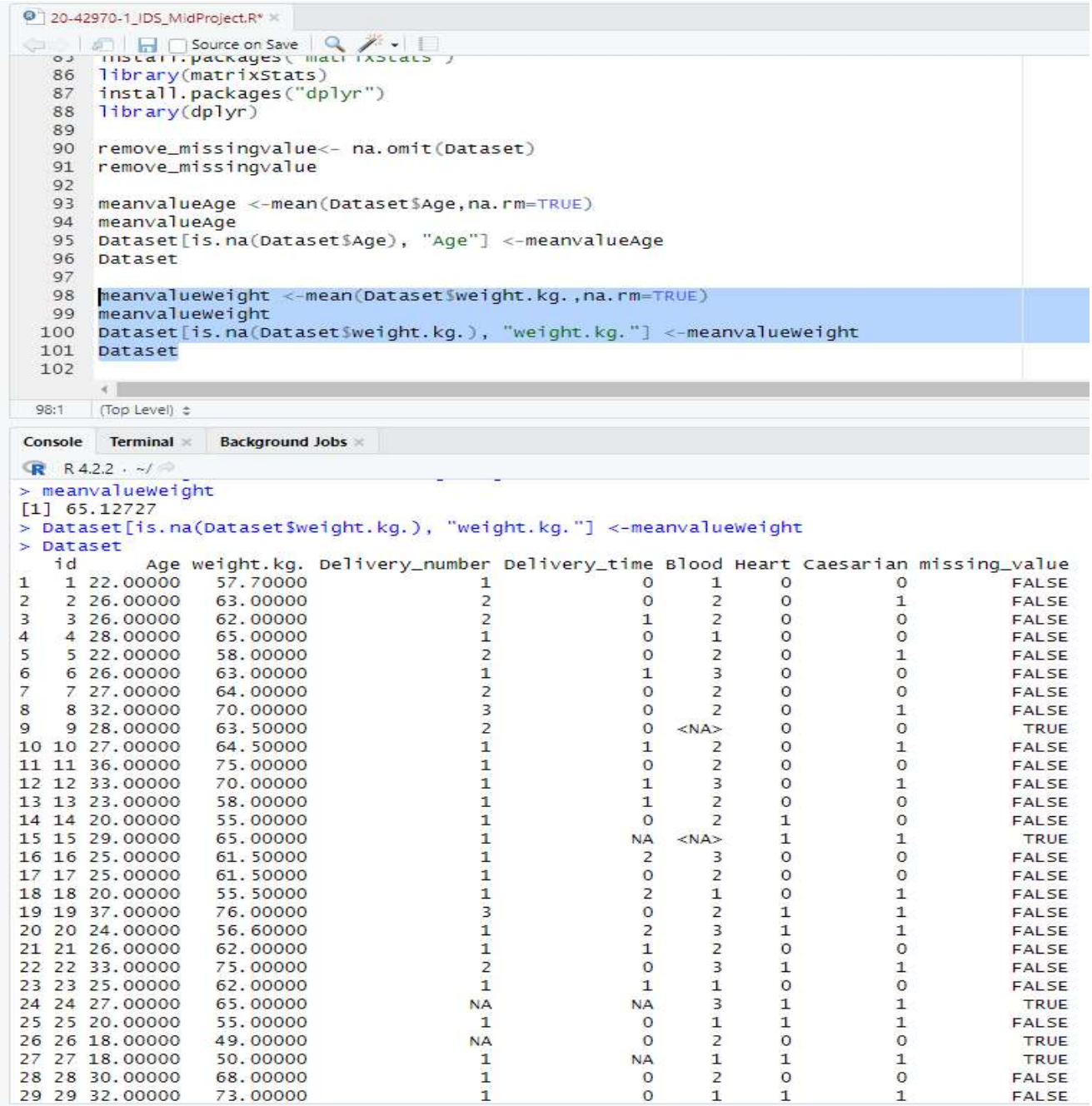
```
> meanvalueAge <-mean(Dataset$Age,na.rm=TRUE)
> meanvalueAge
[1] 29.67532
> Dataset[is.na(Dataset$Age), "Age"] <-meanvalueAge
> Dataset
   id      Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1 22.00000       57.7               1             0     1     0         0         FALSE
2   2 26.00000       63.0               2             0     2     0         1         FALSE
3   3 26.00000       62.0               2             1     2     0         0         FALSE
4   4 28.00000       65.0               1             0     1     0         0         FALSE
5   5 22.00000       58.0               2             0     2     0         1         FALSE
6   6 26.00000       63.0               1             1     3     0         0         FALSE
7   7 27.00000       64.0               2             0     2     0         0         FALSE
8   8 32.00000       70.0               3             0     2     0         1         FALSE
9   9 28.00000       63.5               2             0  <NA>     0         0          TRUE
10 10 27.00000       64.5               1             1     2     0         1         FALSE
11 11 36.00000       75.0               1             0     2     0         0         FALSE
12 12 33.00000       70.0               1             1     3     0         1         FALSE
13 13 23.00000       58.0               1             1     2     0         0         FALSE
14 14 20.00000       55.0               1             0     2     1         0         FALSE
15 15 29.00000       65.0               1            NA  <NA>     1         1          TRUE
16 16 25.00000       61.5               1             2     3     0         0         FALSE
17 17 25.00000       61.5               1             0     2     0         0         FALSE
18 18 20.00000       55.5               1             2     1     0         1         FALSE
19 19 37.00000       76.0               3             0     2     1         1         FALSE
20 20 24.00000       56.6               1             2     3     1         1         FALSE
21 21 26.00000       62.0               1             1     2     0         0         FALSE
22 22 33.00000       75.0               2             0     3     1         1         FALSE
23 23 25.00000       62.0               1             1     1     0         0         FALSE
24 24 27.00000       65.0              NA            NA     3     1         1          TRUE
25 25 20.00000       55.0               1             0     1     1         1         FALSE
26 26 18.00000       49.0              NA             0     2     0         0          TRUE
27 27 18.00000       50.0               1            NA     1     1         1          TRUE
28 28 30.00000       68.0               1             0     2     0         0         FALSE
```

meanvalueWeight <-mean(Dataset$weight.kg.,na.rm=TRUE)

meanvalueWeight

Dataset[is.na(Dataset$weight.kg.), "weight.kg."] <-meanvalueWeight

Dataset



```
20-42970-1_IDS_MidProject.R*
Source on Save
install.packages("matrixStats")
library(matrixstats)
install.packages("dplyr")
library(dplyr)

remove_missingvalue<- na.omit(Dataset)
remove_missingvalue

meanvalueAge <-mean(Dataset$Age,na.rm=TRUE)
meanvalueAge
Dataset[is.na(Dataset$Age), "Age"] <-meanvalueAge
Dataset

meanvalueweight <-mean(Dataset$weight.kg.,na.rm=TRUE)
meanvalueweight
Dataset[is.na(Dataset$weight.kg.), "weight.kg."] <-meanvalueweight
Dataset

98:1  (Top Level)

Console  Terminal  Background Jobs
R 4.2.2 · ~/
> meanvalueweight
[1] 65.12727
> Dataset[is.na(Dataset$weight.kg.), "weight.kg."] <-meanvalueweight
> Dataset
   id       Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1 22.00000   57.70000               1             0     1     0         0         FALSE
2   2 26.00000   63.00000               2             0     2     0         1         FALSE
3   3 26.00000   62.00000               2             1     2     0         0         FALSE
4   4 28.00000   65.00000               1             0     1     0         0         FALSE
5   5 22.00000   58.00000               2             0     2     0         1         FALSE
6   6 26.00000   63.00000               1             1     3     0         0         FALSE
7   7 27.00000   64.00000               2             0     2     0         0         FALSE
8   8 32.00000   70.00000               3             0     2     0         1         FALSE
9   9 28.00000   63.50000               2             0  <NA>     0         0          TRUE
10 10 27.00000   64.50000               1             1     2     0         1         FALSE
11 11 36.00000   75.00000               1             0     2     0         0         FALSE
12 12 33.00000   70.00000               1             1     3     0         1         FALSE
13 13 23.00000   58.00000               1             1     2     0         0         FALSE
14 14 20.00000   55.00000               1             0     2     1         0         FALSE
15 15 29.00000   65.00000               1            NA  <NA>     1         1          TRUE
16 16 25.00000   61.50000               1             2     3     0         0         FALSE
17 17 25.00000   61.50000               1             0     2     0         0         FALSE
18 18 20.00000   55.50000               1             2     1     0         1         FALSE
19 19 37.00000   76.00000               3             0     2     1         1         FALSE
20 20 24.00000   56.60000               1             2     3     1         1         FALSE
21 21 26.00000   62.00000               1             1     2     0         0         FALSE
22 22 33.00000   75.00000               2             0     3     1         1         FALSE
23 23 25.00000   62.00000               1             1     1     0         0         FALSE
24 24 27.00000   65.00000              NA            NA     3     1         1          TRUE
25 25 20.00000   55.00000               1             0     1     1         1         FALSE
26 26 18.00000   49.00000              NA             0     2     0         0          TRUE
27 27 18.00000   50.00000               1            NA     1     1         1          TRUE
28 28 30.00000   68.00000               1             0     2     0         0         FALSE
29 29 32.00000   73.00000               1             0     1     1         1         FALSE
```

meanvalueDelivery_number <-mean(Dataset$Delivery_number,na.rm=TRUE)

meanvalueDelivery_number

Dataset[is.na(Dataset$Delivery_number), "Delivery_number"] <-meanvalueDelivery_number

Dataset

```
103 meanvalueDelivery_number <-mean(Dataset$Delivery_number,na.rm=TRUE)
104 meanvalueDelivery_number
105 Dataset[is.na(Dataset$Delivery_number), "Delivery_number"] <-meanvalueDelivery_number
106 Dataset
107
```

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Console Terminal Background Jobs

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```
80 80 24.00000   57.00000              2             2     2     0          0          FALSE
> meanvalueDelivery_number <-mean(Dataset$Delivery_number,na.rm=TRUE)
> meanvalueDelivery_number
[1] 1.679487
> Dataset[is.na(Dataset$Delivery_number), "Delivery_number"] <-meanvalueDelivery_number
> Dataset
   id      Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1 22.00000   57.70000        1.000000             0     1     0         0         FALSE
2   2 26.00000   63.00000        2.000000             0     2     0         1         FALSE
3   3 26.00000   62.00000        2.000000             1     2     0         0         FALSE
4   4 28.00000   65.00000        1.000000             0     1     0         0         FALSE
5   5 22.00000   58.00000        2.000000             0     2     0         1         FALSE
6   6 26.00000   63.00000        1.000000             1     3     0         0         FALSE
7   7 27.00000   64.00000        2.000000             0     2     0         0         FALSE
8   8 32.00000   70.00000        3.000000             0     2     0         1         FALSE
9   9 28.00000   63.50000        2.000000             0  <NA>     0         0          TRUE
10 10 27.00000   64.50000        1.000000             1     2     0         1         FALSE
11 11 36.00000   75.00000        1.000000             0     2     0         0         FALSE
12 12 33.00000   70.00000        1.000000             1     3     0         1         FALSE
13 13 23.00000   58.00000        1.000000             1     2     0         0         FALSE
14 14 20.00000   55.00000        1.000000             0     2     1         0         FALSE
15 15 29.00000   65.00000        1.000000            NA  <NA>     1         1          TRUE
16 16 25.00000   61.50000        1.000000             2     3     0         0         FALSE
17 17 25.00000   61.50000        1.000000             0     2     0         0         FALSE
18 18 20.00000   55.50000        1.000000             2     1     0         1         FALSE
19 19 37.00000   76.00000        3.000000             0     2     1         1         FALSE
20 20 24.00000   56.60000        1.000000             2     3     1         1         FALSE
21 21 26.00000   62.00000        1.000000             1     2     0         0         FALSE
22 22 33.00000   75.00000        2.000000             0     3     1         1         FALSE
23 23 25.00000   62.00000        1.000000             1     1     0         0         FALSE
24 24 27.00000   65.00000        1.679487            NA     3     1         1          TRUE
25 25 20.00000   55.00000        1.000000             0     1     1         1         FALSE
26 26 18.00000   49.00000        1.679487             0     2     0         0          TRUE
27 27 18.00000   50.00000        1.000000            NA     1     1         1          TRUE
```

meanvalueDelivery_time <-mean(Dataset$Delivery_time,na.rm=TRUE)

meanvalueDelivery_time

Dataset[is.na(Dataset$Delivery_time), "Delivery_time"] <-meanvalueDelivery_time

Dataset

```
108 meanvalueDelivery_time <-mean(Dataset$Delivery_time,na.rm=TRUE)
109 meanvalueDelivery_time
110 Dataset[is.na(Dataset$Delivery_time), "Delivery_time"] <-meanvalueDelivery_time
111 Dataset
112
113
```

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Console Terminal Background Jobs

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```
> meanvalueDelivery_time
[1] 0.6233766
> Dataset[is.na(Dataset$Delivery_time), "Delivery_time"] <-meanvalueDelivery_time
> Dataset
   id      Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1 22.00000   57.70000        1.000000     0.0000000     1     0         0         FALSE
2   2 26.00000   63.00000        2.000000     0.0000000     2     0         1         FALSE
3   3 26.00000   62.00000        2.000000     1.0000000     2     0         0         FALSE
4   4 28.00000   65.00000        1.000000     0.0000000     1     0         0         FALSE
5   5 22.00000   58.00000        2.000000     0.0000000     2     0         1         FALSE
6   6 26.00000   63.00000        1.000000     1.0000000     3     0         0         FALSE
7   7 27.00000   64.00000        2.000000     0.0000000     2     0         0         FALSE
8   8 32.00000   70.00000        3.000000     0.0000000     2     0         1         FALSE
9   9 28.00000   63.50000        2.000000     0.0000000  <NA>     0         0          TRUE
10 10 27.00000   64.50000        1.000000     1.0000000     2     0         1         FALSE
11 11 36.00000   75.00000        1.000000     0.0000000     2     0         0         FALSE
12 12 33.00000   70.00000        1.000000     1.0000000     3     0         1         FALSE
13 13 23.00000   58.00000        1.000000     1.0000000     2     0         0         FALSE
14 14 20.00000   55.00000        1.000000     0.0000000     2     1         0         FALSE
15 15 29.00000   65.00000        1.000000     0.6233766  <NA>     1         1          TRUE
16 16 25.00000   61.50000        1.000000     2.0000000     3     0         0         FALSE
17 17 25.00000   61.50000        1.000000     0.0000000     2     0         0         FALSE
18 18 20.00000   55.50000        1.000000     2.0000000     1     0         1         FALSE
19 19 37.00000   76.00000        3.000000     0.0000000     2     1         1         FALSE
20 20 24.00000   56.60000        1.000000     2.0000000     3     1         1         FALSE
21 21 26.00000   62.00000        1.000000     1.0000000     2     0         0         FALSE
22 22 33.00000   75.00000        2.000000     0.0000000     3     1         1         FALSE
23 23 25.00000   62.00000        1.000000     1.0000000     1     0         0         FALSE
24 24 27.00000   65.00000        1.679487     0.6233766     3     1         1          TRUE
25 25 20.00000   55.00000        1.000000     0.0000000     1     1         1         FALSE
26 26 18.00000   49.00000        1.679487     0.0000000     2     0         0          TRUE
27 27 18.00000   50.00000        1.000000     0.6233766     1     1         1          TRUE
28 28 30.00000   68.00000        1.000000     0.0000000     2     0         0         FALSE
29 29 32.00000   73.00000        1.000000     0.0000000     1     1         1         FALSE
```

meanvalueCaesarian <-mean(Dataset$Caesarian,na.rm=TRUE)

meanvalueCaesarian

Dataset[is.na(Dataset$Caesarian), "Caesarian"] <-meanvalueCaesarian

Dataset

20-42970-1_IDS_MidProject.R | Dataset

Source on Save

```
meanvalueCaesarian <-mean(Dataset$Caesarian,na.rm=TRUE)
meanvalueCaesarian
Dataset[is.na(Dataset$Caesarian), "Caesarian"] <-meanvalueCaesarian
Dataset
```

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Console | Terminal | Background Jobs

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```
> meanvalueCaesarian
[1] 0.5641026
> Dataset[is.na(Dataset$Caesarian), "Caesarian"] <-meanvalueCaesarian
> Dataset
```

	id	Age	weight.kg.	Delivery_number	Delivery_time	Blood	Heart	Caesarian	missing_value
1	1	22.00000	57.70000	1.000000	0.0000000	1	0	0.0000000	FALSE
2	2	26.00000	63.00000	2.000000	0.0000000	2	0	1.0000000	FALSE
3	3	26.00000	62.00000	2.000000	1.0000000	2	0	0.0000000	FALSE
4	4	28.00000	65.00000	1.000000	0.0000000	1	0	0.0000000	FALSE
5	5	22.00000	58.00000	2.000000	0.0000000	2	0	1.0000000	FALSE
6	6	26.00000	63.00000	1.000000	1.0000000	3	0	0.0000000	FALSE
7	7	27.00000	64.00000	2.000000	0.0000000	2	0	0.0000000	FALSE
8	8	32.00000	70.00000	3.000000	0.0000000	2	0	1.0000000	FALSE
9	9	28.00000	63.50000	2.000000	0.0000000	<NA>	0	0.0000000	TRUE
10	10	27.00000	64.50000	1.000000	1.0000000	2	0	1.0000000	FALSE
11	11	36.00000	75.00000	1.000000	0.0000000	2	0	0.0000000	FALSE
12	12	33.00000	70.00000	1.000000	1.0000000	3	0	1.0000000	FALSE
13	13	23.00000	58.00000	1.000000	1.0000000	2	0	0.0000000	FALSE
14	14	20.00000	55.00000	1.000000	0.0000000	2	1	0.0000000	FALSE
15	15	29.00000	65.00000	1.000000	0.6233766	<NA>	1	1.0000000	TRUE
16	16	25.00000	61.50000	1.000000	2.0000000	3	0	0.0000000	FALSE
17	17	25.00000	61.50000	1.000000	0.0000000	2	0	0.0000000	FALSE
18	18	20.00000	55.50000	1.000000	2.0000000	1	0	1.0000000	FALSE
19	19	37.00000	76.00000	3.000000	0.0000000	2	1	1.0000000	FALSE
20	20	24.00000	56.60000	1.000000	2.0000000	3	1	1.0000000	FALSE
21	21	26.00000	62.00000	1.000000	1.0000000	2	0	0.0000000	FALSE
22	22	33.00000	75.00000	2.000000	0.0000000	3	1	1.0000000	FALSE
23	23	25.00000	62.00000	1.000000	1.0000000	1	0	0.0000000	FALSE
24	24	27.00000	65.00000	1.679487	0.6233766	3	1	1.0000000	TRUE
25	25	20.00000	55.00000	1.000000	0.0000000	1	1	1.0000000	FALSE
26	26	18.00000	49.00000	1.679487	0.0000000	2	0	0.0000000	TRUE
27	27	18.00000	50.00000	1.000000	0.6233766	1	1	1.0000000	TRUE
28	28	30.00000	68.00000	1.000000	0.0000000	2	0	0.0000000	FALSE
29	29	32.00000	73.00000	1.000000	0.0000000	1	1	1.0000000	FALSE
30	30	26.00000	62.50000	2.000000	1.0000000	2	1	0.0000000	FALSE
31	31	25.00000	58.00000	1.000000	0.0000000	3	0	0.0000000	FALSE
32	32	40.00000	82.00000	1.000000	0.0000000	2	1	1.0000000	FALSE
33	33	32.00000	68.00000	2.000000	0.0000000	1	1	1.0000000	FALSE
34	34	27.00000	63.00000	2.000000	0.0000000	2	1	1.0000000	FALSE
35	35	26.00000	59.00000	2.000000	2.0000000	2	0	1.0000000	FALSE
36	36	28.00000	66.00000	3.000000	0.0000000	1	0	1.0000000	FALSE
37	37	33.00000	75.00000	1.000000	1.0000000	2	0	0.0000000	FALSE
38	38	31.00000	69.00000	2.000000	2.0000000	2	0	0.0000000	FALSE
39	39	31.00000	63.00000	1.000000	0.0000000	2	0	0.0000000	FALSE
40	40	26.00000	59.00000	1.000000	2.0000000	3	1	1.0000000	FALSE
41	41	27.00000	63.00000	1.000000	0.0000000	1	1	1.0000000	FALSE
42	42	19.00000	51.00000	1.000000	0.0000000	2	0	1.0000000	FALSE

43	43	36.00000	73.00000	1.000000	1.0000000	1	0	1.0000000	FALSE
44	44	22.00000	57.00000	1.000000	0.0000000	2	0	1.0000000	FALSE
45	45	36.00000	72.50000	4.000000	0.0000000	1	1	1.0000000	FALSE
46	46	28.00000	62.50000	3.000000	0.0000000	2	1	1.0000000	FALSE
47	47	26.00000	65.12727	1.000000	0.0000000	2	0	0.0000000	TRUE
48	48	32.00000	67.50000	2.000000	0.0000000	1	1	1.0000000	FALSE
49	49	26.00000	62.50000	2.000000	2.0000000	2	0	0.0000000	FALSE
50	50	29.67532	65.12727	2.000000	0.0000000	3	1	1.0000000	TRUE
51	51	33.00000	68.50000	3.000000	2.0000000	2	1	0.0000000	FALSE
52	52	21.00000	53.00000	2.000000	1.0000000	3	1	1.0000000	FALSE
53	53	30.00000	68.00000	3.000000	2.0000000	1	0	0.0000000	FALSE
54	54	35.00000	74.00000	1.000000	1.0000000	3	0	0.0000000	FALSE
55	55	29.00000	63.50000	2.000000	0.0000000	2	1	1.0000000	FALSE
56	56	25.00000	59.00000	2.000000	0.0000000	2	0	0.0000000	FALSE
57	57	32.00000	67.50000	3.000000	1.0000000	3	1	1.0000000	FALSE
58	58	95.00000	110.00000	1.000000	0.0000000	3	0	1.0000000	FALSE
59	59	26.00000	61.50000	1.000000	0.0000000	1	0	1.0000000	FALSE
60	60	30.00000	67.50000	2.000000	1.0000000	1	1	0.5641026	TRUE
61	61	22.00000	58.50000	1.000000	2.0000000	1	0	0.0000000	FALSE
62	62	29.67532	65.12727	1.000000	0.0000000	2	0	1.0000000	TRUE
63	63	32.00000	67.00000	2.000000	0.0000000	3	0	1.0000000	FALSE
64	64	32.00000	67.00000	2.000000	0.0000000	2	1	1.0000000	FALSE
65	65	31.00000	66.00000	1.000000	2.0000000	1	1	0.0000000	FALSE
66	66	35.00000	72.00000	2.000000	0.0000000	2	0	1.0000000	FALSE
67	67	28.00000	62.50000	3.000000	0.0000000	2	0	1.0000000	FALSE
68	68	29.00000	64.50000	2.000000	0.0000000	2	1	0.0000000	FALSE
69	69	25.00000	62.00000	1.000000	0.0000000	3	0	1.0000000	FALSE
70	70	27.00000	61.00000	2.000000	2.0000000	3	0	0.0000000	FALSE
71	71	90.00000	105.00000	1.000000	0.0000000	3	0	1.0000000	FALSE
72	72	29.00000	65.00000	1.000000	2.0000000	<NA>	1	1.0000000	TRUE
73	73	28.00000	64.00000	2.000000	0.0000000	2	0	0.0000000	FALSE
74	74	32.00000	69.00000	3.000000	0.0000000	2	1	0.0000000	FALSE
75	75	38.00000	75.00000	3.000000	2.0000000	1	1	1.0000000	FALSE
76	76	27.00000	62.50000	2.000000	1.0000000	2	0	0.0000000	FALSE
77	77	33.00000	66.00000	4.000000	0.0000000	2	0	0.5641026	TRUE
78	78	29.67532	63.00000	2.000000	1.0000000	1	0	1.0000000	TRUE
79	79	25.00000	58.00000	1.000000	2.0000000	3	0	1.0000000	FALSE
80	80	24.00000	57.00000	2.000000	2.0000000	2	0	0.0000000	FALSE

II. Recover missing values with the median value.

medianvalueAge <-median(Dataset$Age,na.rm=TRUE)

medianvalueAge

Dataset[is.na(Dataset$Age), "Age"] <-medianvalueAge

Dataset

```
medianvalueAge <-median(Dataset$Age,na.rm=TRUE)
medianvalueAge
Dataset[is.na(Dataset$Age), "Age"] <-medianvalueAge
Dataset
```

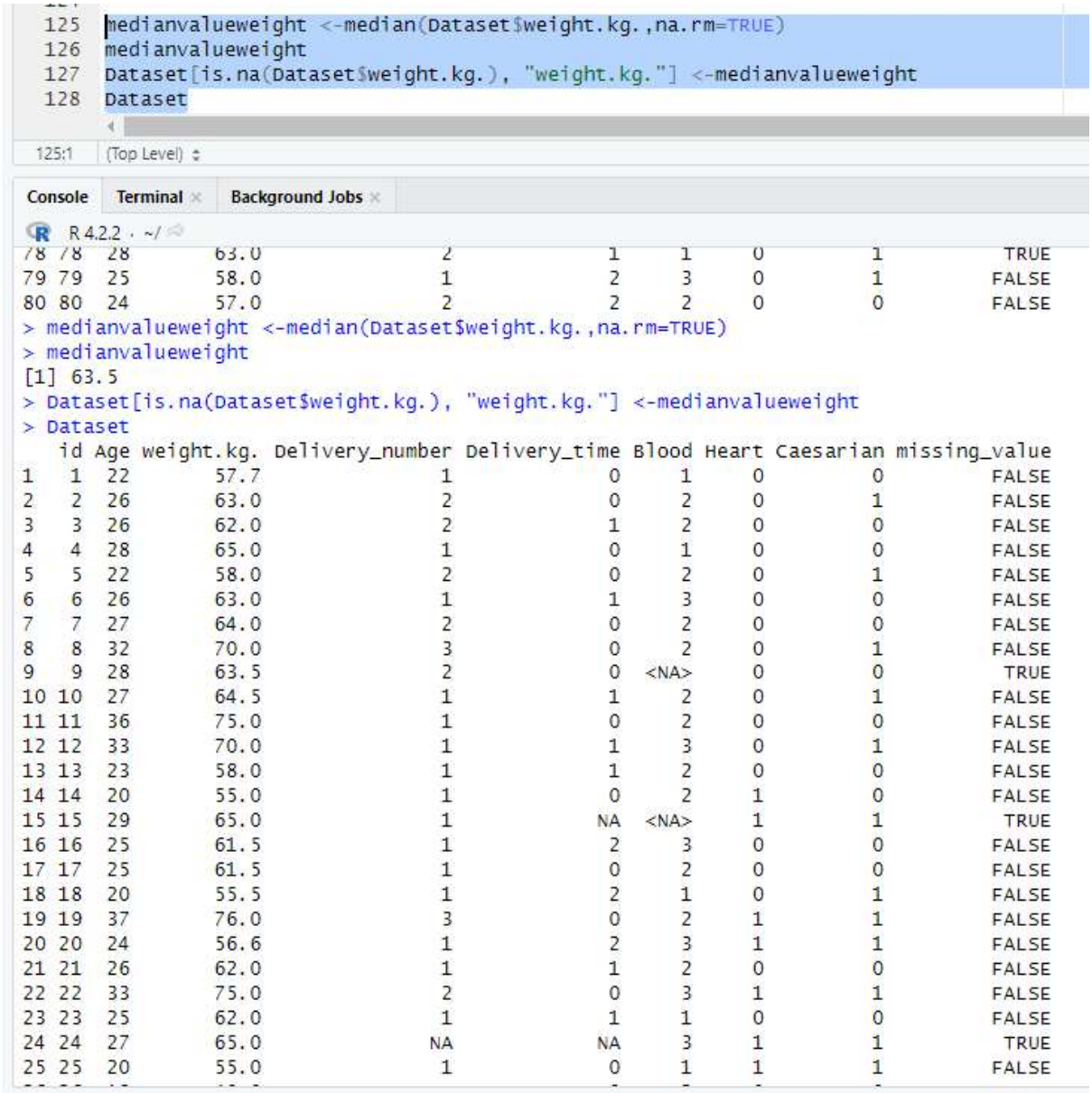
```
80 80  24       57.0                2                2      2      0          0           FALSE
>
> Data= filter(Dataset,Dataset$missing_value !=FALSE)
> medianvalueAge <-median(Dataset$Age,na.rm=TRUE)
> medianvalueAge
[1] 28
> Dataset[is.na(Dataset$Age), "Age"] <-medianvalueAge
> Dataset
   id Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1  22       57.7                1             0     1     0          0          FALSE
2   2  26       63.0                2             0     2     0          1          FALSE
3   3  26       62.0                2             1     2     0          0          FALSE
4   4  28       65.0                1             0     1     0          0          FALSE
5   5  22       58.0                2             0     2     0          1          FALSE
6   6  26       63.0                1             1     3     0          0          FALSE
7   7  27       64.0                2             0     2     0          0          FALSE
8   8  32       70.0                3             0     2     0          1          FALSE
9   9  28       63.5                2             0  <NA>     0          0           TRUE
10 10  27       64.5                1             1     2     0          1          FALSE
11 11  36       75.0                1             0     2     0          0          FALSE
12 12  33       70.0                1             1     3     0          1          FALSE
13 13  23       58.0                1             1     2     0          0          FALSE
14 14  20       55.0                1             0     2     1          0          FALSE
15 15  29       65.0                1            NA  <NA>     1          1           TRUE
16 16  25       61.5                1             2     3     0          0          FALSE
17 17  25       61.5                1             0     2     0          0          FALSE
18 18  20       55.5                1             2     1     0          1          FALSE
19 19  37       76.0                3             0     2     1          1          FALSE
20 20  24       56.6                1             2     3     1          1          FALSE
21 21  26       62.0                1             1     2     0          0          FALSE
22 22  33       75.0                2             0     3     1          1          FALSE
23 23  25       62.0                1             1     1     0          0          FALSE
24 24  27       65.0               NA            NA     3     1          1           TRUE
25 25  20       55.0                1             0     1     1          1          FALSE
```

medianvalueweight <-median(Dataset$weight.kg.,na.rm=TRUE)

medianvalueweight

Dataset[is.na(Dataset$weight.kg.), "weight.kg."] <-medianvalueweight

Dataset



```
125 medianvalueweight <-median(Dataset$weight.kg.,na.rm=TRUE)
126 medianvalueweight
127 Dataset[is.na(Dataset$weight.kg.), "weight.kg."] <-medianvalueweight
128 Dataset
```

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Console | Terminal | Background Jobs

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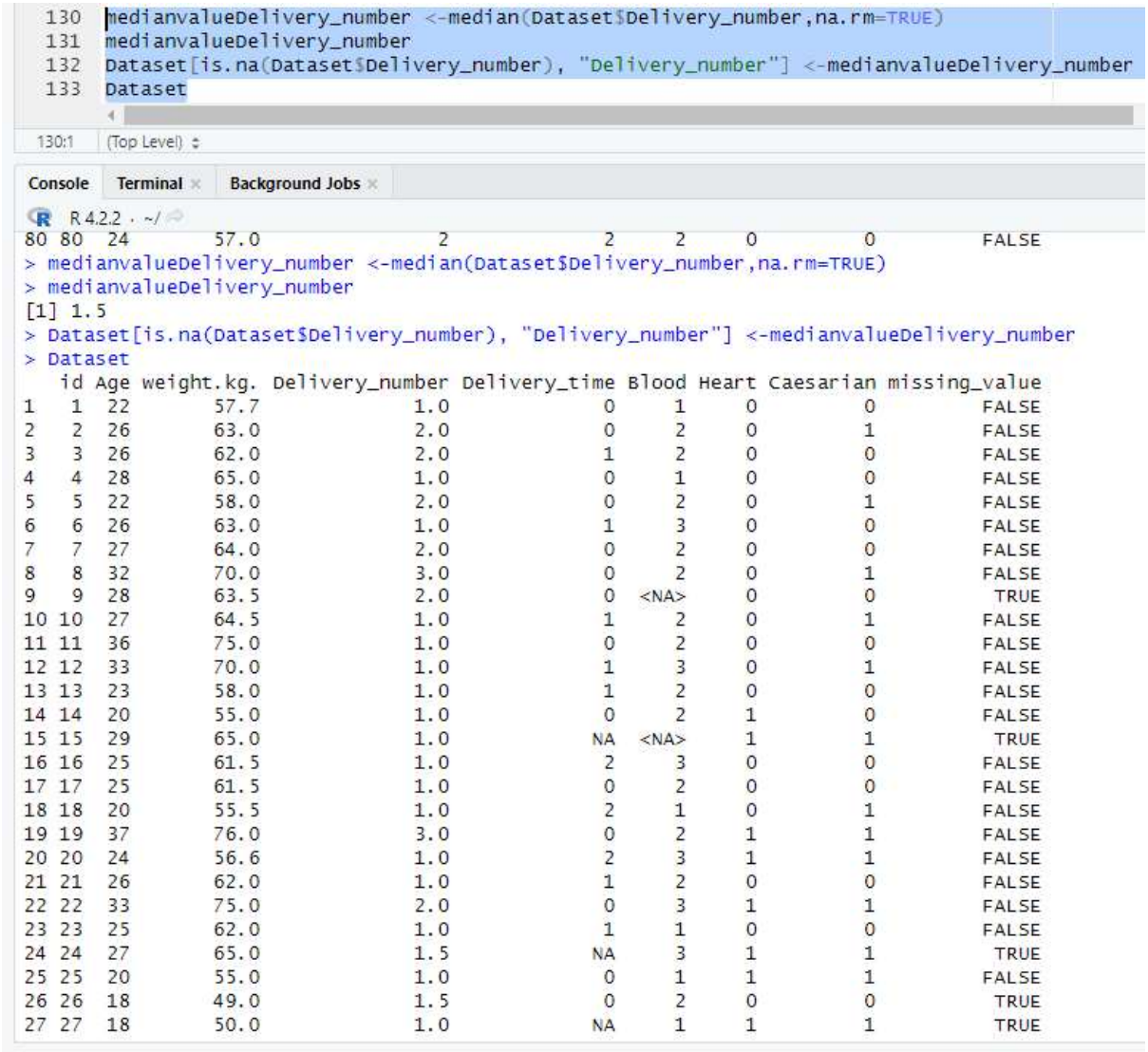
```
78 78  28        63.0                2               1      1      0          1           TRUE
79 79  25        58.0                1               2      3      0          1          FALSE
80 80  24        57.0                2               2      2      0          0          FALSE
> medianvalueweight <-median(Dataset$weight.kg.,na.rm=TRUE)
> medianvalueweight
[1] 63.5
> Dataset[is.na(Dataset$weight.kg.), "weight.kg."] <-medianvalueweight
> Dataset
   id Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1  22        57.7                1             0     1      0          0          FALSE
2   2  26        63.0                2             0     2      0          1          FALSE
3   3  26        62.0                2             1     2      0          0          FALSE
4   4  28        65.0                1             0     1      0          0          FALSE
5   5  22        58.0                2             0     2      0          1          FALSE
6   6  26        63.0                1             1     3      0          0          FALSE
7   7  27        64.0                2             0     2      0          0          FALSE
8   8  32        70.0                3             0     2      0          1          FALSE
9   9  28        63.5                2             0  <NA>      0          0           TRUE
10 10  27        64.5                1             1     2      0          1          FALSE
11 11  36        75.0                1             0     2      0          0          FALSE
12 12  33        70.0                1             1     3      0          1          FALSE
13 13  23        58.0                1             1     2      0          0          FALSE
14 14  20        55.0                1             0     2      1          0          FALSE
15 15  29        65.0                1            NA  <NA>      1          1           TRUE
16 16  25        61.5                1             2     3      0          0          FALSE
17 17  25        61.5                1             0     2      0          0          FALSE
18 18  20        55.5                1             2     1      0          1          FALSE
19 19  37        76.0                3             0     2      1          1          FALSE
20 20  24        56.6                1             2     3      1          1          FALSE
21 21  26        62.0                1             1     2      0          0          FALSE
22 22  33        75.0                2             0     3      1          1          FALSE
23 23  25        62.0                1             1     1      0          0          FALSE
24 24  27        65.0               NA            NA     3      1          1           TRUE
25 25  20        55.0                1             0     1      1          1          FALSE
```

medianvalueDelivery_number <-median(Dataset$Delivery_number,na.rm=TRUE)

medianvalueDelivery_number

Dataset[is.na(Dataset$Delivery_number), "Delivery_number"] <-medianvalueDelivery_number

Dataset



```
130 medianvalueDelivery_number <-median(Dataset$Delivery_number,na.rm=TRUE)
131 medianvalueDelivery_number
132 Dataset[is.na(Dataset$Delivery_number), "Delivery_number"] <-medianvalueDelivery_number
133 Dataset
```

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Console | Terminal | Background Jobs

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```
80 80  24       57.0               2               2     2     0         0          FALSE
> medianvalueDelivery_number <-median(Dataset$Delivery_number,na.rm=TRUE)
> medianvalueDelivery_number
[1] 1.5
> Dataset[is.na(Dataset$Delivery_number), "Delivery_number"] <-medianvalueDelivery_number
> Dataset
   id Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1  22       57.7             1.0             0     1     0         0          FALSE
2   2  26       63.0             2.0             0     2     0         1          FALSE
3   3  26       62.0             2.0             1     2     0         0          FALSE
4   4  28       65.0             1.0             0     1     0         0          FALSE
5   5  22       58.0             2.0             0     2     0         1          FALSE
6   6  26       63.0             1.0             1     3     0         0          FALSE
7   7  27       64.0             2.0             0     2     0         0          FALSE
8   8  32       70.0             3.0             0     2     0         1          FALSE
9   9  28       63.5             2.0             0  <NA>     0         0           TRUE
10 10  27       64.5             1.0             1     2     0         1          FALSE
11 11  36       75.0             1.0             0     2     0         0          FALSE
12 12  33       70.0             1.0             1     3     0         1          FALSE
13 13  23       58.0             1.0             1     2     0         0          FALSE
14 14  20       55.0             1.0             0     2     1         0          FALSE
15 15  29       65.0             1.0            NA  <NA>     1         1           TRUE
16 16  25       61.5             1.0             2     3     0         0          FALSE
17 17  25       61.5             1.0             0     2     0         0          FALSE
18 18  20       55.5             1.0             2     1     0         1          FALSE
19 19  37       76.0             3.0             0     2     1         1          FALSE
20 20  24       56.6             1.0             2     3     1         1          FALSE
21 21  26       62.0             1.0             1     2     0         0          FALSE
22 22  33       75.0             2.0             0     3     1         1          FALSE
23 23  25       62.0             1.0             1     1     0         0          FALSE
24 24  27       65.0             1.5            NA     3     1         1           TRUE
25 25  20       55.0             1.0             0     1     1         1          FALSE
26 26  18       49.0             1.5             0     2     0         0           TRUE
27 27  18       50.0             1.0            NA     1     1         1           TRUE
```

medianvalueDelivery_time <-median(Dataset$Delivery_time,na.rm=TRUE)

medianvalueDelivery_time

Dataset[is.na(Dataset$Delivery_time), "Delivery_time"] <-medianvalueDelivery_time

Dataset

```
135 medianvalueDelivery_time <-median(Dataset$Delivery_time,na.rm=TRUE)
136 medianvalueDelivery_time
137 Dataset[is.na(Dataset$Delivery_time), "Delivery_time"] <-medianvalueDelivery_time
138 Dataset
```

135:1 (Top Level)

Console | Terminal | Background Jobs

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```
80 80  24       57.0             2.0             2     2     0         0          FALSE
> medianvalueDelivery_time <-median(Dataset$Delivery_time,na.rm=TRUE)
> medianvalueDelivery_time
[1] 0
> Dataset[is.na(Dataset$Delivery_time), "Delivery_time"] <-medianvalueDelivery_time
> Dataset
   id Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1  22       57.7             1.0             0     1     0         0         FALSE
2   2  26       63.0             2.0             0     2     0         1         FALSE
3   3  26       62.0             2.0             1     2     0         0         FALSE
4   4  28       65.0             1.0             0     1     0         0         FALSE
5   5  22       58.0             2.0             0     2     0         1         FALSE
6   6  26       63.0             1.0             1     3     0         0         FALSE
7   7  27       64.0             2.0             0     2     0         0         FALSE
8   8  32       70.0             3.0             0     2     0         1         FALSE
9   9  28       63.5             2.0             0  <NA>     0         0          TRUE
10 10  27       64.5             1.0             1     2     0         1         FALSE
11 11  36       75.0             1.0             0     2     0         0         FALSE
12 12  33       70.0             1.0             1     3     0         1         FALSE
13 13  23       58.0             1.0             1     2     0         0         FALSE
14 14  20       55.0             1.0             0     2     1         0         FALSE
15 15  29       65.0             1.0             0  <NA>     1         1          TRUE
16 16  25       61.5             1.0             2     3     0         0         FALSE
17 17  25       61.5             1.0             0     2     0         0         FALSE
18 18  20       55.5             1.0             2     1     0         1         FALSE
19 19  37       76.0             3.0             0     2     1         1         FALSE
20 20  24       56.6             1.0             2     3     1         1         FALSE
21 21  26       62.0             1.0             1     2     0         0         FALSE
22 22  33       75.0             2.0             0     3     1         1         FALSE
23 23  25       62.0             1.0             1     1     0         0         FALSE
24 24  27       65.0             1.5             0     3     1         1          TRUE
25 25  20       55.0             1.0             0     1     1         1         FALSE
26 26  18       49.0             1.5             0     2     0         0          TRUE
27 27  18       50.0             1.0             0     1     1         1          TRUE
```

medianvalueCaesarian <-median(Dataset$Caesarian,na.rm=TRUE)

medianvalueCaesarian

Dataset[is.na(Dataset$Caesarian), "Caesarian"] <-medianvalueCaesarian

Dataset

```
142 medianvalueCaesarian <-median(Dataset$Caesarian,na.rm=TRUE)
143 medianvalueCaesarian
144 Dataset[is.na(Dataset$Caesarian), "Caesarian"] <-medianvalueCaesarian
145 Dataset
146
```

142:1 (Top Level)

Console | Terminal | Background Jobs

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```
> medianvalueCaesarian <-median(Dataset$Caesarian,na.rm=TRUE)
> medianvalueCaesarian
[1] 1
> Dataset[is.na(Dataset$Caesarian), "Caesarian"] <-medianvalueCaesarian
> Dataset
```

	id	Age	weight.kg.	Delivery_number	Delivery_time	Blood	Heart	Caesarian	missing_value
1	1	22	57.7	1.0	0	1	0	0	FALSE
2	2	26	63.0	2.0	0	2	0	1	FALSE
3	3	26	62.0	2.0	1	2	0	0	FALSE
4	4	28	65.0	1.0	0	1	0	0	FALSE
5	5	22	58.0	2.0	0	2	0	1	FALSE
6	6	26	63.0	1.0	1	3	0	0	FALSE
7	7	27	64.0	2.0	0	2	0	0	FALSE
8	8	32	70.0	3.0	0	2	0	1	FALSE
9	9	28	63.5	2.0	0	<NA>	0	0	TRUE
10	10	27	64.5	1.0	1	2	0	1	FALSE
11	11	36	75.0	1.0	0	2	0	0	FALSE
12	12	33	70.0	1.0	1	3	0	1	FALSE
13	13	23	58.0	1.0	1	2	0	0	FALSE
14	14	20	55.0	1.0	0	2	1	0	FALSE
15	15	29	65.0	1.0	0	<NA>	1	1	TRUE
16	16	25	61.5	1.0	2	3	0	0	FALSE
17	17	25	61.5	1.0	0	2	0	0	FALSE
18	18	20	55.5	1.0	2	1	0	1	FALSE
19	19	37	76.0	3.0	0	2	1	1	FALSE
20	20	24	56.6	1.0	2	3	1	1	FALSE
21	21	26	62.0	1.0	1	2	0	0	FALSE
22	22	33	75.0	2.0	0	3	1	1	FALSE
23	23	25	62.0	1.0	1	1	0	0	FALSE
24	24	27	65.0	1.5	0	3	1	1	TRUE
25	25	20	55.0	1.0	0	1	1	1	FALSE
26	26	18	49.0	1.5	0	2	0	0	TRUE
27	27	18	50.0	1.0	0	1	1	1	TRUE
28	28	30	68.0	1.0	0	2	0	0	FALSE
29	29	32	73.0	1.0	0	1	1	1	FALSE
30	30	26	62.5	2.0	1	2	1	0	FALSE
31	31	25	58.0	1.0	0	3	0	0	FALSE
32	32	40	82.0	1.0	0	2	1	1	FALSE
33	33	32	68.0	2.0	0	1	1	1	FALSE
34	34	27	63.0	2.0	0	2	1	1	FALSE
35	35	26	59.0	2.0	2	2	0	1	FALSE
36	36	28	66.0	3.0	0	1	0	1	FALSE
37	37	33	75.0	1.0	1	2	0	0	FALSE
38	38	31	69.0	2.0	2	2	0	0	FALSE
39	39	31	63.0	1.0	0	2	0	0	FALSE
40	40	26	59.0	1.0	2	3	1	1	FALSE
41	41	27	63.0	1.0	0	1	1	1	FALSE

42	42	19	51.0	1.0	0	2	0	1	FALSE
43	43	36	73.0	1.0	1	1	0	1	FALSE
44	44	22	57.0	1.0	0	2	0	1	FALSE
45	45	36	72.5	4.0	0	1	1	1	FALSE
46	46	28	62.5	3.0	0	2	1	1	FALSE
47	47	26	63.5	1.0	0	2	0	0	TRUE
48	48	32	67.5	2.0	0	1	1	1	FALSE
49	49	26	62.5	2.0	2	2	0	0	FALSE
50	50	28	63.5	2.0	0	3	1	1	TRUE
51	51	33	68.5	3.0	2	2	1	0	FALSE
52	52	21	53.0	2.0	1	3	1	1	FALSE
53	53	30	68.0	3.0	2	1	0	0	FALSE
54	54	35	74.0	1.0	1	3	0	0	FALSE
55	55	29	63.5	2.0	0	2	1	1	FALSE
56	56	25	59.0	2.0	0	2	0	0	FALSE
57	57	32	67.5	3.0	1	3	1	1	FALSE
58	58	95	110.0	1.0	0	3	0	1	FALSE
59	59	26	61.5	1.0	0	1	0	1	FALSE
60	60	30	67.5	2.0	1	1	1	1	TRUE
61	61	22	58.5	1.0	2	1	0	0	FALSE
62	62	28	63.5	1.0	0	2	0	1	TRUE
63	63	32	67.0	2.0	0	3	0	1	FALSE
64	64	32	67.0	2.0	0	2	1	1	FALSE
65	65	31	66.0	1.0	2	1	1	0	FALSE
66	66	35	72.0	2.0	0	2	0	1	FALSE
67	67	28	62.5	3.0	0	2	0	1	FALSE
68	68	29	64.5	2.0	0	2	1	0	FALSE
69	69	25	62.0	1.0	0	3	0	1	FALSE
70	70	27	61.0	2.0	2	3	0	0	FALSE
71	71	90	105.0	1.0	0	3	0	1	FALSE
72	72	29	65.0	1.0	2	<NA>	1	1	TRUE
73	73	28	64.0	2.0	0	2	0	0	FALSE
74	74	32	69.0	3.0	0	2	1	0	FALSE
75	75	38	75.0	3.0	2	1	1	1	FALSE
76	76	27	62.5	2.0	1	2	0	0	FALSE
77	77	33	66.0	4.0	0	2	0	1	TRUE
78	78	28	63.0	2.0	1	1	0	1	TRUE
79	79	25	58.0	1.0	2	3	0	1	FALSE
80	80	24	57.0	2.0	2	2	0	0	FALSE

III. Recover missing values with the mode value.

modeAge=names(sort(table(Dataset$Age)))[1]

modeAge

Dataset[is.na(Dataset$Age), "Age"] <-modeAge

Dataset

```
145 modeAge=names(sort(table(Dataset$Age)))[1]
146 modeAge
147 Dataset[is.na(Dataset$Age), "Age"] <-modeAge
148 Dataset
149
150
151
```

145:1 (Top Level)

Console Terminal Background Jobs

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```
> modeAge
[1] "19"
> Dataset[is.na(Dataset$Age), "Age"] <-modeAge
> Dataset
```

	id	Age	weight.kg.	Delivery_number	Delivery_time	Blood	Heart	Caesarian	missing_value
1	1	22	57.7	1	0	1	0	0	FALSE
2	2	26	63.0	2	0	2	0	1	FALSE
3	3	26	62.0	2	1	2	0	0	FALSE
4	4	28	65.0	1	0	1	0	0	FALSE
5	5	22	58.0	2	0	2	0	1	FALSE
6	6	26	63.0	1	1	3	0	0	FALSE
7	7	27	64.0	2	0	2	0	0	FALSE
8	8	32	70.0	3	0	2	0	1	FALSE
9	9	28	63.5	2	0	<NA>	0	0	TRUE
10	10	27	64.5	1	1	2	0	1	FALSE
11	11	36	75.0	1	0	2	0	0	FALSE
12	12	33	70.0	1	1	3	0	1	FALSE
13	13	23	58.0	1	1	2	0	0	FALSE
14	14	20	55.0	1	0	2	1	0	FALSE
15	15	29	65.0	1	NA	<NA>	1	1	TRUE
16	16	25	61.5	1	2	3	0	0	FALSE
17	17	25	61.5	1	0	2	0	0	FALSE
18	18	20	55.5	1	2	1	0	1	FALSE
19	19	37	76.0	3	0	2	1	1	FALSE
20	20	24	56.6	1	2	3	1	1	FALSE
21	21	26	62.0	1	1	2	0	0	FALSE
22	22	33	75.0	2	0	3	1	1	FALSE
23	23	25	62.0	1	1	1	0	0	FALSE
24	24	27	65.0	NA	NA	3	1	1	TRUE
25	25	20	55.0	1	0	1	1	1	FALSE
26	26	18	49.0	NA	0	2	0	0	TRUE
27	27	18	50.0	1	NA	1	1	1	TRUE
28	28	30	68.0	1	0	2	0	0	FALSE
29	29	32	73.0	1	0	1	1	1	FALSE

modeweight=names(sort(table(Dataset$weight.kg.)))[1]

modeweight

Dataset[is.na(Dataset$weight.kg.), "weight.kg."] <-modeweight

Dataset

```
152 modeweight=names(sort(table(Dataset$weight.kg.)))[1]
153 modeweight
154 Dataset[is.na(Dataset$weight.kg.), "weight.kg."] <-modeweight
155 Dataset
```

152:1 (Top Level)

Console Terminal Background Jobs

R 4.2.2 · ~/

```
80 80  24       57.0               2               2     2     0          0          FALSE
> modeweight=names(sort(table(Dataset$weight.kg.)))[1]
> modeweight
[1] "49"
> Dataset[is.na(Dataset$weight.kg.), "weight.kg."] <-modeweight
> Dataset
   id Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1  22       57.7                1             0     1     0          0          FALSE
2   2  26         63                2             0     2     0          1          FALSE
3   3  26         62                2             1     2     0          0          FALSE
4   4  28         65                1             0     1     0          0          FALSE
5   5  22         58                2             0     2     0          1          FALSE
6   6  26         63                1             1     3     0          0          FALSE
7   7  27         64                2             0     2     0          0          FALSE
8   8  32         70                3             0     2     0          1          FALSE
9   9  28       63.5                2             0  <NA>     0          0           TRUE
10 10  27       64.5                1             1     2     0          1          FALSE
11 11  36         75                1             0     2     0          0          FALSE
12 12  33         70                1             1     3     0          1          FALSE
13 13  23         58                1             1     2     0          0          FALSE
14 14  20         55                1             0     2     1          0          FALSE
15 15  29         65                1            NA  <NA>     1          1           TRUE
16 16  25       61.5                1             2     3     0          0          FALSE
17 17  25       61.5                1             0     2     0          0          FALSE
18 18  20       55.5                1             2     1     0          1          FALSE
19 19  37         76                3             0     2     1          1          FALSE
20 20  24       56.6                1             2     3     1          1          FALSE
21 21  26         62                1             1     2     0          0          FALSE
22 22  33         75                2             0     3     1          1          FALSE
23 23  25         62                1             1     1     0          0          FALSE
24 24  27         65               NA            NA     3     1          1           TRUE
25 25  20         55                1             0     1     1          1          FALSE
26 26  18         49               NA             0     2     0          0           TRUE
27 27  18         50                1            NA     1     1          1           TRUE
```

modeDelivery_number=names(sort(table(Dataset$Delivery_number)))[1]

modeDelivery_number

Dataset[is.na(Dataset$Delivery_number), "Delivery_number"] <-modeDelivery_number

Dataset

```
157 modeDelivery_number=names(sort(table(Dataset$Delivery_number)))[1]
158 modeDelivery_number
159 Dataset[is.na(Dataset$Delivery_number), "Delivery_number"] <-modeDelivery_number
160 Dataset
```

157:1 (Top Level)

Console Terminal Background Jobs

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```
80 80  24          57                2               2      2      0          0          FALSE
> modeDelivery_number=names(sort(table(Dataset$Delivery_number)))[1]
> modeDelivery_number
[1] "4"
> Dataset[is.na(Dataset$Delivery_number), "Delivery_number"] <-modeDelivery_number
> Dataset
   id Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1  22       57.7                1             0     1     0          0          FALSE
2   2  26         63                2             0     2     0          1          FALSE
3   3  26         62                2             1     2     0          0          FALSE
4   4  28         65                1             0     1     0          0          FALSE
5   5  22         58                2             0     2     0          1          FALSE
6   6  26         63                1             1     3     0          0          FALSE
7   7  27         64                2             0     2     0          0          FALSE
8   8  32         70                3             0     2     0          1          FALSE
9   9  28       63.5                2             0  <NA>     0          0           TRUE
10 10  27       64.5                1             1     2     0          1          FALSE
11 11  36         75                1             0     2     0          0          FALSE
12 12  33         70                1             1     3     0          1          FALSE
13 13  23         58                1             1     2     0          0          FALSE
14 14  20         55                1             0     2     1          0          FALSE
15 15  29         65                1            NA  <NA>     1          1           TRUE
16 16  25       61.5                1             2     3     0          0          FALSE
17 17  25       61.5                1             0     2     0          0          FALSE
18 18  20       55.5                1             2     1     0          1          FALSE
19 19  37         76                3             0     2     1          1          FALSE
20 20  24       56.6                1             2     3     1          1          FALSE
21 21  26         62                1             1     2     0          0          FALSE
22 22  33         75                2             0     3     1          1          FALSE
23 23  25         62                1             1     1     0          0          FALSE
24 24  27         65                4            NA     3     1          1           TRUE
25 25  20         55                1             0     1     1          1          FALSE
26 26  18         49                4             0     2     0          0           TRUE
27 27  18         50                1            NA     1     1          1           TRUE
```

modeDelivery_time=names(sort(table(Dataset$Delivery_time)))[1]

modeDelivery_time

Dataset[is.na(Dataset$Delivery_time), "Delivery_time"] <-modeDelivery_time

Dataset

```
162 modeDelivery_time=names(sort(table(Dataset$Delivery_time)))[1]
163 modeDelivery_time
164 Dataset[is.na(Dataset$Delivery_time), "Delivery_time"] <-modeDelivery_time
165 Dataset
166
167
```

162:1 (Top Level)

Console Terminal Background Jobs

R 4.2.2 · ~/

```
> modeDelivery_time=names(sort(table(Dataset$Delivery_time)))[1]
> modeDelivery_time
[1] "1"
> Dataset[is.na(Dataset$Delivery_time), "Delivery_time"] <-modeDelivery_time
> Dataset
   id Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1  22       57.7               1             0     1     0         0         FALSE
2   2  26         63               2             0     2     0         1         FALSE
3   3  26         62               2             1     2     0         0         FALSE
4   4  28         65               1             0     1     0         0         FALSE
5   5  22         58               2             0     2     0         1         FALSE
6   6  26         63               1             1     3     0         0         FALSE
7   7  27         64               2             0     2     0         0         FALSE
8   8  32         70               3             0     2     0         1         FALSE
9   9  28       63.5               2             0  <NA>     0         0          TRUE
10 10  27       64.5               1             1     2     0         1         FALSE
11 11  36         75               1             0     2     0         0         FALSE
12 12  33         70               1             1     3     0         1         FALSE
13 13  23         58               1             1     2     0         0         FALSE
14 14  20         55               1             0     2     1         0         FALSE
15 15  29         65               1             1  <NA>     1         1          TRUE
16 16  25       61.5               1             2     3     0         0         FALSE
17 17  25       61.5               1             0     2     0         0         FALSE
18 18  20       55.5               1             2     1     0         1         FALSE
19 19  37         76               3             0     2     1         1         FALSE
20 20  24       56.6               1             2     3     1         1         FALSE
21 21  26         62               1             1     2     0         0         FALSE
22 22  33         75               2             0     3     1         1         FALSE
23 23  25         62               1             1     1     0         0         FALSE
24 24  27         65               4             1     3     1         1          TRUE
25 25  20         55               1             0     1     1         1         FALSE
26 26  18         49               4             0     2     0         0          TRUE
27 27  18         50               1             1     1     1         1          TRUE
28 28  30         68               1             0     2     0         0         FALSE
```

modeCaesarian=names(sort(table(Dataset$Caesarian)))[1]

modeCaesarian

Dataset[is.na(Dataset$Caesarian), "Caesarian"] <-modeCaesarian

Dataset

```
167 modeCaesarian=names(sort(table(Dataset$Caesarian)))[1]
168 modeCaesarian
169 Dataset[is.na(Dataset$Caesarian), "Caesarian"] <-modeCaesarian
170 Dataset
171
172
```

167:1 (Top Level)

Console Terminal Background Jobs

R 4.2.2 · ~/

```
80 80  24         57                2               2      2      0          0          FALSE
> modeCaesarian=names(sort(table(Dataset$Caesarian)))[1]
> modeCaesarian
[1] "0"
> Dataset[is.na(Dataset$Caesarian), "Caesarian"] <-modeCaesarian
> Dataset
   id Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1  22       57.7                1             0     1     0          0          FALSE
2   2  26         63                2             0     2     0          1          FALSE
3   3  26         62                2             1     2     0          0          FALSE
4   4  28         65                1             0     1     0          0          FALSE
5   5  22         58                2             0     2     0          1          FALSE
6   6  26         63                1             1     3     0          0          FALSE
7   7  27         64                2             0     2     0          0          FALSE
8   8  32         70                3             0     2     0          1          FALSE
9   9  28       63.5                2             0  <NA>     0          0           TRUE
10 10  27       64.5                1             1     2     0          1          FALSE
11 11  36         75                1             0     2     0          0          FALSE
12 12  33         70                1             1     3     0          1          FALSE
13 13  23         58                1             1     2     0          0          FALSE
14 14  20         55                1             0     2     1          0          FALSE
15 15  29         65                1             1  <NA>     1          1           TRUE
16 16  25       61.5                1             2     3     0          0          FALSE
17 17  25       61.5                1             0     2     0          0          FALSE
18 18  20       55.5                1             2     1     0          1          FALSE
19 19  37         76                3             0     2     1          1          FALSE
20 20  24       56.6                1             2     3     1          1          FALSE
21 21  26         62                1             1     2     0          0          FALSE
22 22  33         75                2             0     3     1          1          FALSE
23 23  25         62                1             1     1     0          0          FALSE
24 24  27         65                4             1     3     1          1           TRUE
25 25  20         55                1             0     1     1          1          FALSE
26 26  18         49                4             0     2     0          0           TRUE
27 27  18         50                1             1     1     1          1           TRUE
28 28  30         68                1             0     2     0          0          FALSE
29 29  32         73                1             0     1     1          1          FALSE
30 30  26       62.5                2             1     2     1          0          FALSE
31 31  25         58                1             0     3     0          0          FALSE
32 32  40         82                1             0     2     1          1          FALSE
33 33  32         68                2             0     1     1          1          FALSE
34 34  27         63                2             0     2     1          1          FALSE
35 35  26         59                2             2     2     0          1          FALSE
36 36  28         66                3             0     1     0          1          FALSE
37 37  33         75                1             1     2     0          0          FALSE
38 38  31         69                2             2     2     0          0          FALSE
39 39  31         63                1             0     2     0          0          FALSE
40 40  26         59                1             2     3     1          1          FALSE
41 41  27         63                1             0     1     1          1          FALSE
42 42  19         51                1             0     2     0          1          FALSE
43 43  36         73                1             1     1     0          1          FALSE
44 44  22         57                1             0     2     0          1          FALSE
45 45  36       72.5                4             0     1     1          1          FALSE
46 46  28       62.5                3             0     2     1          1          FALSE
47 47  26         49                1             0     2     0          0           TRUE
48 48  32       67.5                2             0     1     1          1          FALSE
49 49  26       62.5                2             2     2     0          0          FALSE
50 50  19         49                2             0     3     1          1           TRUE
```

51	51	33	68.5	3	2	2	1	0	FALSE
52	52	21	53	2	1	3	1	1	FALSE
53	53	30	68	3	2	1	0	0	FALSE
54	54	35	74	1	1	3	0	0	FALSE
55	55	29	63.5	2	0	2	1	1	FALSE
56	56	25	59	2	0	2	0	0	FALSE
57	57	32	67.5	3	1	3	1	1	FALSE
58	58	95	110	1	0	3	0	1	FALSE
59	59	26	61.5	1	0	1	0	1	FALSE
60	60	30	67.5	2	1	1	1	0	TRUE
61	61	22	58.5	1	2	1	0	0	FALSE
62	62	19	49	1	0	2	0	1	TRUE
63	63	32	67	2	0	3	0	1	FALSE
64	64	32	67	2	0	2	1	1	FALSE
65	65	31	66	1	2	1	1	0	FALSE
66	66	35	72	2	0	2	0	1	FALSE
67	67	28	62.5	3	0	2	0	1	FALSE
68	68	29	64.5	2	0	2	1	0	FALSE
69	69	25	62	1	0	3	0	1	FALSE
70	70	27	61	2	2	3	0	0	FALSE
71	71	90	105	1	0	3	0	1	FALSE
72	72	29	65	1	2	<NA>	1	1	TRUE
73	73	28	64	2	0	2	0	0	FALSE
74	74	32	69	3	0	2	1	0	FALSE
75	75	38	75	3	2	1	1	1	FALSE
76	76	27	62.5	2	1	2	0	0	FALSE
77	77	33	66	4	0	2	0	0	TRUE
78	78	19	63	2	1	1	0	1	TRUE
79	79	25	58	1	2	3	0	1	FALSE
80	80	24	57	2	2	2	0	0	FALSE

IV. Remove the rows that have missing values from the data set.

```
remove_missingvalue<- na.omit(Dataset)
remove_missingvalue
```

```
90  remove_missingvalue<- na.omit(Dataset)
91  remove_missingvalue
92
```

90:1 (Top Level)

Console Terminal Background Jobs

R 4.2.2 · ~/

```
> remove_missingvalue<- na.omit(Dataset)
> remove_missingvalue
   id Age weight.kg. Delivery_number Delivery_time Blood Heart Caesarian missing_value
1   1  22       57.7                1             0     1     0         0         FALSE
2   2  26       63.0                2             0     2     0         1         FALSE
3   3  26       62.0                2             1     2     0         0         FALSE
4   4  28       65.0                1             0     1     0         0         FALSE
5   5  22       58.0                2             0     2     0         1         FALSE
6   6  26       63.0                1             1     3     0         0         FALSE
7   7  27       64.0                2             0     2     0         0         FALSE
8   8  32       70.0                3             0     2     0         1         FALSE
10 10  27       64.5                1             1     2     0         1         FALSE
11 11  36       75.0                1             0     2     0         0         FALSE
12 12  33       70.0                1             1     3     0         1         FALSE
13 13  23       58.0                1             1     2     0         0         FALSE
14 14  20       55.0                1             0     2     1         0         FALSE
16 16  25       61.5                1             2     3     0         0         FALSE
17 17  25       61.5                1             0     2     0         0         FALSE
18 18  20       55.5                1             2     1     0         1         FALSE
19 19  37       76.0                3             0     2     1         1         FALSE
20 20  24       56.6                1             2     3     1         1         FALSE
21 21  26       62.0                1             1     2     0         0         FALSE
22 22  33       75.0                2             0     3     1         1         FALSE
23 23  25       62.0                1             1     1     0         0         FALSE
25 25  20       55.0                1             0     1     1         1         FALSE
28 28  30       68.0                1             0     2     0         0         FALSE
29 29  32       73.0                1             0     1     1         1         FALSE
30 30  26       62.5                2             1     2     1         0         FALSE
31 31  25       58.0                1             0     3     0         0         FALSE
32 32  40       82.0                1             0     2     1         1         FALSE
33 33  32       68.0                2             0     1     1         1         FALSE
34 34  27       63.0                2             0     2     1         1         FALSE
35 35  26       59.0                2             2     2     0         1         FALSE
36 36  28       66.0                3             0     1     0         1         FALSE
37 37  33       75.0                1             1     2     0         0         FALSE
38 38  31       69.0                2             2     2     0         0         FALSE
39 39  31       63.0                1             0     2     0         0         FALSE
40 40  26       59.0                1             2     3     1         1         FALSE
41 41  27       63.0                1             0     1     1         1         FALSE
42 42  19       51.0                1             0     2     0         1         FALSE
43 43  36       73.0                1             1     1     0         1         FALSE
44 44  22       57.0                1             0     2     0         1         FALSE
45 45  36       72.5                4             0     1     1         1         FALSE
46 46  28       62.5                3             0     2     1         1         FALSE
48 48  32       67.5                2             0     1     1         1         FALSE
49 49  26       62.5                2             2     2     0         0         FALSE
51 51  33       68.5                3             2     2     1         0         FALSE
52 52  21       53.0                2             1     3     1         1         FALSE
53 53  30       68.0                3             2     1     0         0         FALSE
54 54  35       74.0                1             1     3     0         0         FALSE
55 55  29       63.5                2             0     2     1         1         FALSE
56 56  25       59.0                2             0     2     0         0         FALSE
57 57  32       67.5                3             1     3     1         1         FALSE
58 58  95      110.0                1             0     3     0         1         FALSE
59 59  26       61.5                1             0     1     0         1         FALSE
61 61  22       58.5                1             2     1     0         0         FALSE
63 63  32       67.0                2             0     3     0         1         FALSE
64 64  32       67.0                2             0     2     1         1         FALSE
65 65  31       66.0                1             2     1     1         0         FALSE
66 66  35       72.0                2             0     2     0         1         FALSE
67 67  28       62.5                3             0     2     0         1         FALSE
68 68  29       64.5                2             0     2     1         0         FALSE
69 69  25       62.0                1             0     3     0         1         FALSE
70 70  27       61.0                2             2     3     0         0         FALSE
71 71  90      105.0                1             0     3     0         1         FALSE
73 73  28       64.0                2             0     2     0         0         FALSE
74 74  32       69.0                3             0     2     1         0         FALSE
75 75  38       75.0                3             2     1     1         1         FALSE
76 76  27       62.5                2             1     2     0         0         FALSE
79 79  25       58.0                1             2     3     0         1         FALSE
80 80  24       57.0                2             2     2     0         0         FALSE
```