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Submitted to:

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31770

Q1)

The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains R code for creating a data frame, performing SQL queries using `sqldf`, and installing `ggplot2`.
- Environment:** Lists objects `b` through `d` with their respective dimensions.
- Console:** Displays the output of the R code, showing the data frame and the results of the SQL queries.
- Files/Plots/Packages:** Shows the installed packages and their versions.

```
1 name<-c("Ram","Sai","Shyam","Nayak","Rishith","Sasank","Puneeth",
2         "Rahul","Gowtham","Subhash")
3 id<-c(1,2,3,4,5,6,7,8,9,12)
4 branch<-c("CSE","MECH","EEE","CSE","MCA","CSE","MECH","EEE","MBA",
5           "MCA")
6 marks<-c(95,34,57,91,89,67,55,43,78,77)
7 df<-data.frame(name,id,branch,marks)
8 a<-sqldf("select name from df where marks>90 and branch='CSE'")
9 a
10 b<-sqldf("update df set name='Aarav Sharma' where id=12","select *
11 from df")
12 b
13 c<-sqldf("select avg(marks) from df")
14 c
15 d<-sqldf("delete from df where name='Rahul',"select * from df")
16 d
17
18 install.packages("ggplot2")
```

Environment:

Object	Dimensions
b	10 obs. of 4 variables
c	1 obs. of 1 variable
c1	3 obs. of 5 variables
c2	9 obs. of 4 variables
c3	3 obs. of 5 variables
c4	3 obs. of 6 variables
c5	3 obs. of 5 variables
c6	3 obs. of 5 variables
d	9 obs. of 4 variables

Console Output:

```
name id branch marks
1 Ram 1 CSE 95
2 Sai 2 MECH 34
3 Shyam 3 EEE 57
4 Nayak 4 CSE 91
5 Rishith 5 MCA 89
6 Sasank 6 CSE 67
7 Puneeth 7 MECH 55
8 Gowtham 8 MBA 78
9 Subhash 12 MCA 77
```

Q2)

The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains R code for installing `ggplot2` and `gmodels`, normalizing data, and sampling.
- Environment:** Lists objects `b` through `d` with their respective dimensions.
- Console:** Displays the output of the R code, showing the normalized data and the sampled data.
- Files/Plots/Packages:** Shows the installed packages and their versions.

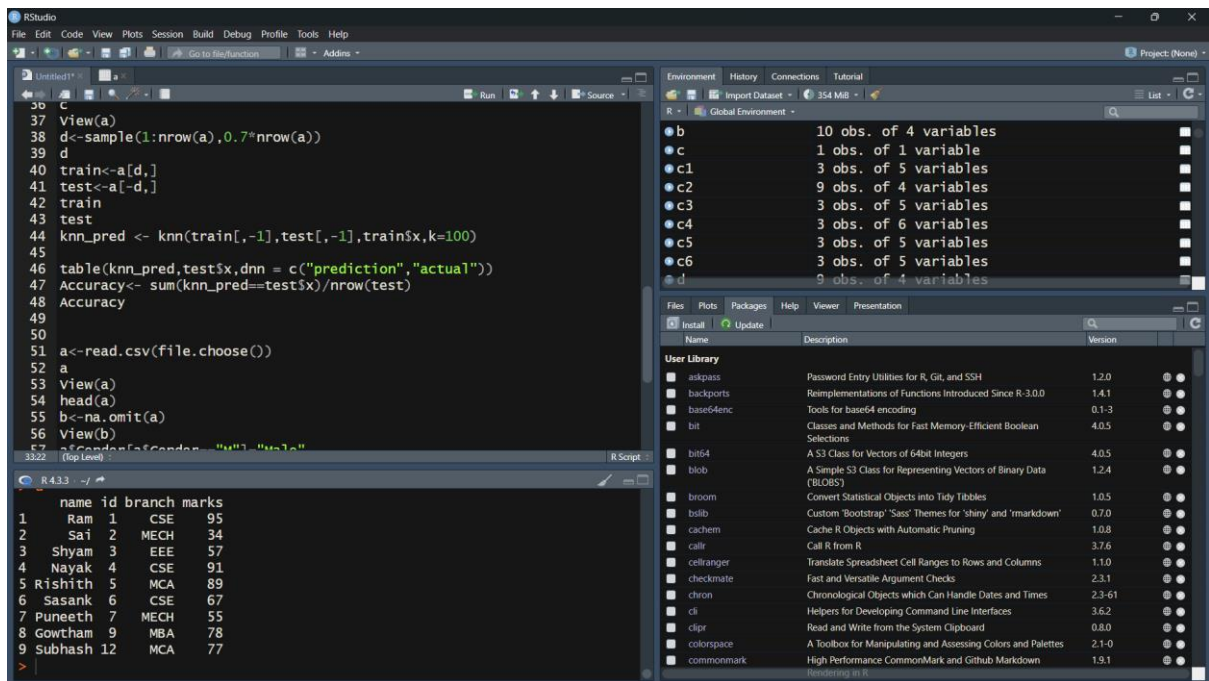
```
18 install.packages("ggplot2")
19 library(ggplot2)
20 a<-diamonds
21 View(a)
22 table(a$color)
23 a$depth[is.na(a$depth)]<-mean(a$depth,na.rm = TRUE)
24 View(a)
25 summary(a$depth)
26 summary(a$price)
27 summary(a$carat)
28 install.packages("gmodels")
29 library(gmodels)
30 normalize<-function(x){
31   return ((x-min(x))/(max(x)-min(x)))
32 }
33 b<-normalize(a$price)
34 b
35 c<-normalize(a$carat)
36 c
37 View(a)
38 d<-sample(1:nrow(a),0.7*nrow(a))
```

Environment:

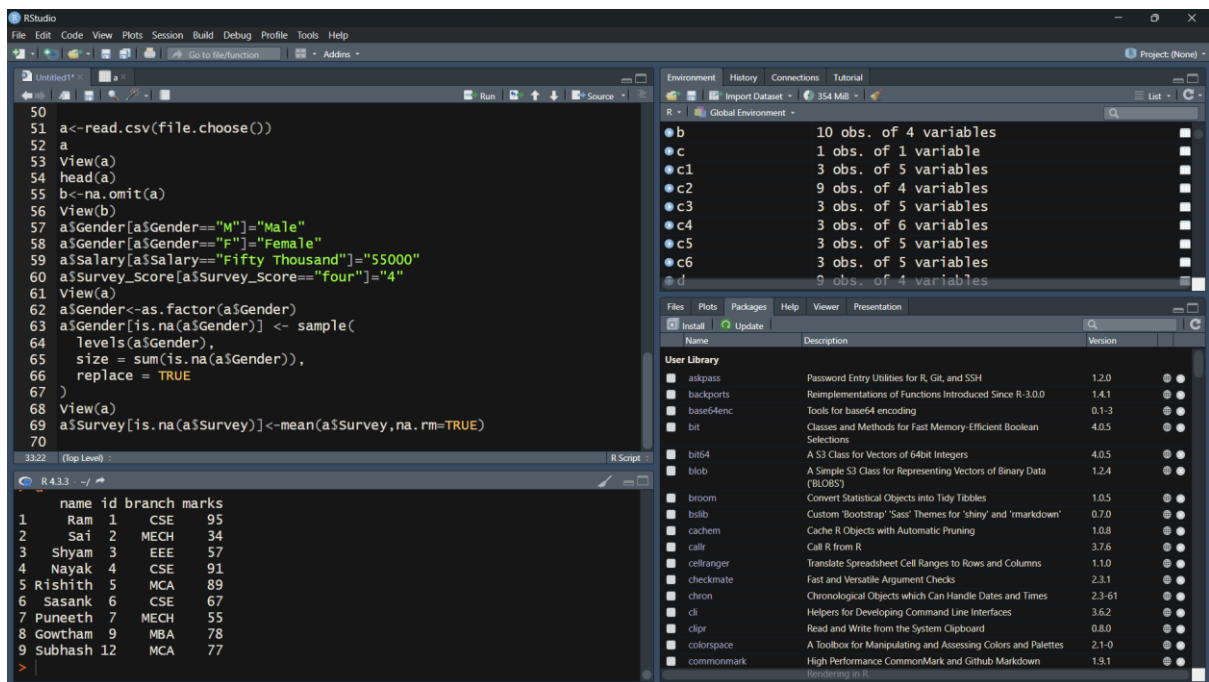
Object	Dimensions
b	10 obs. of 4 variables
c	1 obs. of 1 variable
c1	3 obs. of 5 variables
c2	9 obs. of 4 variables
c3	3 obs. of 5 variables
c4	3 obs. of 6 variables
c5	3 obs. of 5 variables
c6	3 obs. of 5 variables
d	9 obs. of 4 variables

Console Output:

```
name id branch marks
1 Ram 1 CSE 95
2 Sai 2 MECH 34
3 Shyam 3 EEE 57
4 Nayak 4 CSE 91
5 Rishith 5 MCA 89
6 Sasank 6 CSE 67
7 Puneeth 7 MECH 55
8 Gowtham 8 MBA 78
9 Subhash 12 MCA 77
```



Q3)



Output:

Q1)

The screenshot shows the RStudio interface. The Source pane on the left contains the following R code and its output:

```
10 Subhash 12 MCA 77
> library(sqldf)
> a<-sqldf(c("select name from df where marks>90 and branch='CSE'"))
> a
  name
1 Ram
2 Nayak
> b<-sqldf(c("update df set name='Aarav Sharma' where id=12","select * from df"))
Warning message:
In result_fetch(res@ptr, n = n) :
  SQL statements must be issued with dbExecute() or dbSendStatement() instead of dbGetQuery() or dbSendQuery().
> b
  name id branch marks
1 Ram 1 CSE 95
2 Sai 2 MECH 34
3 Shyam 3 EEE 57
4 Nayak 4 CSE 91
5 Rishith 5 MCA 89
6 Sasank 6 CSE 67
7 Puneeth 7 MECH 55
8 Rahul 8 EEE 43
9 Gowtham 9 MBA 78
10 Aarav Sharma 12 MCA 77
> c<-sqldf(c("select avg(marks) from df"))
> c
  avg(marks)
1 68.6
> d<-sqldf(c("delete from df where name='Rahul'", "select * from df"))
Warning message:
In result_fetch(res@ptr, n = n) :
  SQL statements must be issued with dbExecute() or dbSendStatement() instead of dbGetQuery() or dbSendQuery().
> d
```

The Environment pane on the right shows the following objects:

Object	Obs.	Vars.
b	10	4
c	1	1
c1	3	5
c2	9	4
c3	3	5
c4	3	6
c5	3	5
c6	3	5
d	9	4

The screenshot shows the RStudio interface. The Source pane on the left contains the following R code and its output:

```
Warning message:
In result_fetch(res@ptr, n = n) :
  SQL statements must be issued with dbExecute() or dbSendStatement() instead of dbGetQuery() or dbSendQuery().
> b
  name id branch marks
1 Ram 1 CSE 95
2 Sai 2 MECH 34
3 Shyam 3 EEE 57
4 Nayak 4 CSE 91
5 Rishith 5 MCA 89
6 Sasank 6 CSE 67
7 Puneeth 7 MECH 55
8 Rahul 8 EEE 43
9 Gowtham 9 MBA 78
10 Aarav Sharma 12 MCA 77
> c<-sqldf(c("select avg(marks) from df"))
> c
  avg(marks)
1 68.6
> d<-sqldf(c("delete from df where name='Rahul'", "select * from df"))
Warning message:
In result_fetch(res@ptr, n = n) :
  SQL statements must be issued with dbExecute() or dbSendStatement() instead of dbGetQuery() or dbSendQuery().
> d
  name id branch marks
1 Ram 1 CSE 95
2 Sai 2 MECH 34
3 Shyam 3 EEE 57
4 Nayak 4 CSE 91
5 Rishith 5 MCA 89
6 Sasank 6 CSE 67
7 Puneeth 7 MECH 55
8 Gowtham 9 MBA 78
9 Subhash 12 MCA 77
> |
```

The Environment pane on the right shows the following objects:

Object	Obs.	Vars.
b	10	4
c	1	1
c1	3	5
c2	9	4
c3	3	5
c4	3	6
c5	3	5
c6	3	5
d	9	4

Q2)

```
RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Source
R 4.3.3 - /
Error in readRDS(dest) : error reading from connection
> library(ggplot2)
> a<-diamonds
> view(a)
> table(a$color)

  D     E     F     G     H     I     J
6775 9797 9542 11292 8304 5422 2808
> a$depth[is.na(a$depth)]<-mean(a$depth,na.rm = TRUE)
> view(a)
> summary(a$depth)
  Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
43.00  61.00  61.80  61.75  62.50  79.00
> summary(a$table)
  Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
43.00  56.00  57.00  57.46  59.00  95.00
> summary(a$price)
  Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
   326    950   2401   3933   5324  18823
> install.packages("gmodels")
Error in install.packages : error reading from connection
> library(gmodels)
> normalize<-function(x){
+   return ((x-min(x))/(max(x)-min(x)))
+ }
> b<-normalize(a$price)
> b
[1] 0.000000e+00 0.000000e+00 5.406282e-05 4.325026e-04 4.865654e-04
[6] 5.406282e-04 5.406282e-04 5.946910e-04 5.946910e-04 6.487539e-04
[11] 7.028167e-04 7.568795e-04 8.650051e-04 9.731308e-04 1.027194e-03
[16] 1.027194e-03 1.189382e-03 1.351571e-03 1.351571e-03 1.351571e-03
[21] 1.351571e-03 1.405633e-03 1.459696e-03 1.459696e-03 1.459696e-03
[26] 1.513759e-03 1.567822e-03 1.675947e-03 1.675947e-03 1.675947e-03
[31] 4.108774e-03 4.108774e-03 4.108774e-03 4.108774e-03 4.108774e-03
[36] 4.108774e-03 4.108774e-03 4.108774e-03 4.162837e-03 4.162837e-03

Environment History Connections Tutorial
R - Global Environment - 209 MB
b_count 357L
b1 5
branch chr [1:10] "CSE" "MECH" "EEE" "CSE" "MCA" "C...
c num [1:53940] 0.368 0.362 0.377 0.391 0.404 ...
col_name chr [1:3] "c1" "c2" "c3"
colors chr [1:4] "red" "orange" "yellow" "green"
cost num [1:4] 50 100 500 300
dept chr [1:5] "IT" "CSE" "IT" "MARKETING" "MARKE...
dir Factor w/ 3 levels "east", "north"...: NA 3 1

Files Plots Packages Help Viewer Presentation
Install Update
Name Description Version
User Library
askpass Password Entry Utilities for R, Git, and SSH 1.2.0
backports Reimplementations of Functions Introduced Since R-3.0.0 1.4.1
base64enc Tools for base64 encoding 0.1-3
bit Classes and Methods for Fast Memory-Efficient Boolean Selections 4.0.5
bit64 A 64-bit Class for Vectors of 64-bit Integers 4.0.5
blob A Simple S3 Class for Representing Vectors of Binary Data (BLOBs) 1.2.4
broom Convert Statistical Objects into Tidy Tibbles 1.0.5
bslib Custom 'Bootstrap'-Style Themes for 'shiny' and 'rmarkdown' 0.7.0
cachem Cache R Objects with Automatic Pruning 1.0.8
callr Call R from R 3.7.6
cellranger Translate Spreadsheet Cell Ranges to Rows and Columns 1.1.0
checkmate Fast and Versatile Argument Checks 2.3.1
chron Chronological Objects which Can Handle Dates and Times 2.3-61
cli Helpers for Developing Command Line Interfaces 3.6.2
clipr Read and Write from the System Clipboard 0.8.0
colorspace A Toolbox for Manipulating and Assessing Colors and Palettes 2.1-0
commonmark High Performance CommonMark and GitHub Markdown 1.9.1
```

```
RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Source
R 4.3.3 - /
> test<-a[-d,]
> train
# A tibble: 37,758 x 10
  carat cut    color clarity depth table price    x    y    z
  <dbl> <ord> <ord> <ord> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
1 1.5 Premium J SI1 61.2 61 7518 7.43 7.37 4.53
2 0.33 Premium G VS1 60.9 60 868 4.46 4.5 2.73
3 1.02 Premium G SI2 60.7 56 3904 6.56 6.51 3.97
4 0.35 Premium D SI1 61 60 827 4.58 4.54 2.78
5 1.04 Very Good G VS2 63.4 55 6232 6.48 6.42 4.09
6 1.2 Very Good I VS2 62.3 56 5955 6.76 6.81 4.23
7 1.17 Ideal I SI2 61.8 54 4999 6.78 6.82 4.2
8 0.82 Ideal D VS2 61.9 56 4628 5.98 6.03 3.72
9 0.34 Ideal I VS1 61.8 56 626 4.47 4.5 2.77
10 0.31 Good D SI1 63.3 59 502 4.24 4.29 2.7
# i 37,748 more rows
# Use `print(n = ...)` to see more rows
> test
# A tibble: 16,182 x 10
  carat cut    color clarity depth table price    x    y    z
  <dbl> <ord> <ord> <ord> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
1 0.23 Ideal E SI2 61.5 55 326 3.95 3.98 2.43
2 0.31 Good J SI2 63.3 58 335 4.34 4.35 2.75
3 0.24 Very Good I VS1 62.3 57 336 3.95 3.98 2.47
4 0.22 Fair E VS2 65.1 61 337 3.87 3.78 2.49
5 0.23 Very Good H VS1 59.4 61 338 4 4.05 2.39
6 0.31 Ideal J SI2 62.2 54 344 4.35 4.37 2.71
7 0.2 Premium E SI2 60.2 62 345 3.79 3.75 2.27
8 0.3 Ideal I SI2 62 54 348 4.31 4.34 2.68
9 0.3 Good J SI1 63.8 56 351 4.23 4.26 2.71
10 0.3 Very Good J SI1 62.7 59 351 4.21 4.27 2.66
# i 16,172 more rows
# Use `print(n = ...)` to see more rows
> |

Environment History Connections Tutorial
R - Global Environment - 216 MB
test 16182 obs. of 10 variables
train 37758 obs. of 10 variables
wbcd 569 obs. of 31 variables
wbcd_n 569 obs. of 30 variables
z2 4 obs. of 4 variables
Values
a1 chr [1:5] "chd" "pgw" "De1" "gun" "vlp"
ab NULL
abc "the answer is 32"

Files Plots Packages Help Viewer Presentation
Install Update
Name Description Version
User Library
askpass Password Entry Utilities for R, Git, and SSH 1.2.0
backports Reimplementations of Functions Introduced Since R-3.0.0 1.4.1
base64enc Tools for base64 encoding 0.1-3
bit Classes and Methods for Fast Memory-Efficient Boolean Selections 4.0.5
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blob A Simple S3 Class for Representing Vectors of Binary Data (BLOBs) 1.2.4
broom Convert Statistical Objects into Tidy Tibbles 1.0.5
bslib Custom 'Bootstrap'-Style Themes for 'shiny' and 'rmarkdown' 0.7.0
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clipr Read and Write from the System Clipboard 0.8.0
colorspace A Toolbox for Manipulating and Assessing Colors and Palettes 2.1-0
commonmark High Performance CommonMark and GitHub Markdown 1.9.1
```

```
> Accuracy
[1] 0.9064327
> |
```

Q3)

```
14 4.000
> head(a)
  ID   Name Age Gender Salary Survey_Score Earned.Points
1 101 John Doe  28     M  55000             3.000
2 102 Jane Smith 34 Female             4.5         4.000
3 103 Mary-Jane NA     F  72000           four         6.000
4 104   Chris  45     M  48000             5         1.098
5 105   Anna  31     M  53000           3.8         0.000
6 106   Doe  38   Male  60000             2.000
> |
```

The screenshot shows the RStudio environment with a data frame 'a' loaded. The data frame has 14 observations and 7 variables. The variables are: ID, Name, Age, Gender, Salary, Survey_Score, and Earned.Points. The data is displayed in a table format in the Environment pane. The console shows the command 'head(a)' and the output of the first six rows of the data frame.

ID	Name	Age	Gender	Salary	Survey_Score	Earned.Points
1	John Doe	28	M	55000		3.000
2	Jane Smith	34	Female		4.5	4.000
3	Mary-Jane	NA	F	72000	four	6.000
4	Chris	45	M	48000	5	1.098
5	Anna	31	M	53000	3.8	0.000
6	Doe	38	Male	60000		2.000

Showing 1 to 11 of 11 entries, 7 total columns

```
> head(a)
  ID   Name Age Gender Salary Survey_Score Earned.Points
1 101 John Doe  28     M  55000             3.000
2 102 Jane Smith 34 Female             4.5         4.000
3 103 Mary-Jane NA     F  72000           four         6.000
4 104   Chris  45     M  48000             5         1.098
5 105   Anna  31     M  53000           3.8         0.000
6 106   Doe  38   Male  60000             2.000
> b<-na.omit(a)
> View(b)
> |
```


RStudio interface showing a data frame with 14 rows and 7 columns. The data is displayed in a table view. The console shows the following code:

```
R 4.3.3 > a
> b <- na.omit(a)
> View(b)
> a$gender[a$gender=="M"]="Male"
> a$gender[a$gender=="F"]="Female"
> a$Salary[a$Salary=="Fifty Thousand"]="55000"
> a$Survey_Score[a$Survey_Score=="four"]="4"
> View(a)
```

The Environment pane shows the following objects:

- a: 14 obs. of 7 variables
- a2: 4 obs. of 4 variables
- a3: 4 obs. of 4 variables
- AAPL: 'xts' num [1:4364, 1:6] 3.08 3 3.06 3.07 3...
- ad: num [1:4, 1:3] 9 12 15 18 10 13 16 19 11 14...
- b: 11 obs. of 7 variables
- c1: 3 obs. of 5 variables
- c2: 9 obs. of 4 variables

The User Library pane shows the following packages:

- askpass: Password Entry Utilities for R, Git, and SSH 1.2.0
- backports: Reimplementations of Functions Introduced Since R-3.0.0 1.4.1
- base64enc: Tools for base64 encoding 0.1-3
- bit: Classes and Methods for Fast Memory-Efficient Boolean Selections 4.0.5
- bit64: A 64-bit Class for Vectors of 64-bit Integers 4.0.5
- blob: A Simple S3 Class for Representing Vectors of Binary Data (BLOBs) 1.2.4
- broom: Convert Statistical Objects into Tidy Tibbles 1.0.5
- bslib: Custom 'Bootstrap' Sass Themes for 'shiny' and 'markdown' 0.7.0
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- chron: Chronological Objects which Can Handle Dates and Times 2.3-61
- cli: Helpers for Developing Command Line Interfaces 3.6.2
- clipr: Read and Write from the System Clipboard 0.8.0
- colorspace: A Toolbox for Manipulating and Assessing Colors and Palettes 2.1-0
- commonmark: High Performance CommonMark and Github Markdown 1.9.1

RStudio interface showing the same data frame. The console shows the following code:

```
R 4.3.3 > a
> a$Salary[a$Salary=="Fifty Thousand"]="55000"
> a$Survey_Score[a$Survey_Score=="four"]="4"
> View(a)
> a$gender <- as.factor(a$gender)
> a$gender[is.na(a$gender)] <- sample(
+   levels(a$gender),
+   size = sum(is.na(a$gender)),
+   replace = TRUE
+ )
> View(a)
```

The Environment pane shows the following objects:

- a: 14 obs. of 7 variables
- a2: 4 obs. of 4 variables
- a3: 4 obs. of 4 variables
- AAPL: 'xts' num [1:4364, 1:6] 3.08 3 3.06 3.07 3...
- ad: num [1:4, 1:3] 9 12 15 18 10 13 16 19 11 14...
- b: 11 obs. of 7 variables
- c1: 3 obs. of 5 variables
- c2: 9 obs. of 4 variables

The User Library pane shows the following packages:

- askpass: Password Entry Utilities for R, Git, and SSH 1.2.0
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- bit: Classes and Methods for Fast Memory-Efficient Boolean Selections 4.0.5
- bit64: A 64-bit Class for Vectors of 64-bit Integers 4.0.5
- blob: A Simple S3 Class for Representing Vectors of Binary Data (BLOBs) 1.2.4
- broom: Convert Statistical Objects into Tidy Tibbles 1.0.5
- bslib: Custom 'Bootstrap' Sass Themes for 'shiny' and 'markdown' 0.7.0
- cachem: Cache R Objects with Automatic Pruning 1.0.8
- callr: Call R from R 3.7.6
- cellranger: Translate Spreadsheet Cell Ranges to Rows and Columns 1.1.0
- checkmate: Fast and Versatile Argument Checks 2.3.1
- chron: Chronological Objects which Can Handle Dates and Times 2.3-61
- cli: Helpers for Developing Command Line Interfaces 3.6.2
- clipr: Read and Write from the System Clipboard 0.8.0
- colorspace: A Toolbox for Manipulating and Assessing Colors and Palettes 2.1-0
- commonmark: High Performance CommonMark and Github Markdown 1.9.1

RStudio interface showing a data frame 'a' with 14 rows and 8 columns. The columns are ID, Name, Age, Gender, Salary, Survey_Score, Earned.Points, and Survey. The data is displayed in a table view. The console shows the following R code and output:

```
> a$Gender<-as.factor(a$Gender)
> a$Gender[is.na(a$Gender)] <- sample(
+   levels(a$Gender),
+   size = sum(is.na(a$Gender)),
+   replace = TRUE
+ )
> view(a)
> a$Survey[is.na(a$Survey)]<-mean(a$Survey,na.rm=TRUE)
> view(a)
Error in readRDS(dest) : error reading from connection
> |
```

The Environment pane shows the following objects:

- a: 14 obs. of 8 variables
- a2: 4 obs. of 4 variables
- a3: 4 obs. of 4 variables
- AAPL: 'xts' num [1:4364, 1:6] 3.08 3 3.06 3.07 3...
- ad: num [1:4, 1:3] 9 12 15 18 10 13 16 19 11 14...
- b: 11 obs. of 7 variables
- c1: 3 obs. of 5 variables
- c2: 9 obs. of 4 variables

The User Library pane shows the following packages:

Name	Description	Version
askpass	Password Entry Utilities for R, Git, and SSH	1.2.0
backports	Reimplementations of Functions Introduced Since R-3.0.0	1.4.1
base64enc	Tools for base64 encoding	0.1-3
bit	Classes and Methods for Fast Memory-Efficient Boolean Selections	4.0.5
bit64	A S3 Class for Vectors of 64bit Integers	4.0.5
blob	A Simple S3 Class for Representing Vectors of Binary Data ('BLOBs')	1.2.4
broom	Convert Statistical Objects into Tidy Tibbles	1.0.5
bslib	Custom 'Bootstrap' Sass Themes for 'shiny' and 'markdown'	0.7.0
cachem	Cache R Objects with Automatic Pruning	1.0.8
callr	Call R from R	3.7.6
cellranger	Translate Spreadsheet Cell Ranges to Rows and Columns	1.1.0
checkmate	Fast and Versatile Argument Checks	2.3.1
chron	Chronological Objects which Can Handle Dates and Times	2.3-61
cli	Helpers for Developing Command Line Interfaces	3.6.2
clipr	Read and Write from the System Clipboard	0.8.0
colorspace	A Toolbox for Manipulating and Assessing Colors and Palettes	2.1-0
commonmark	High Performance CommonMark and Github Markdown	1.9.1