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Date – 20/01/2022

Title – M1_Project

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Q1)

```
> print("PLOTTING BASICS:PATEL")
[1] "PLOTTING BASICS:PATEL"
>
```

Q2)

```
> utils:::menuInstallPkgs()
--- Please select a CRAN mirror for use in this session ---
> install.packages("FSA")
Installing package into 'C:/Users/dhruvil patel/Documents/R/win-library/4.1'
(as 'lib' is unspecified)
also installing the dependencies 'listenv', 'parallelly', 'future', 'globals', 'future.apply', 'progres


  There are binary versions available but the source versions are later:
                binary     source needs_compilation
yaml             2.2.1      2.2.2              TRUE
RcppArmadillo 0.10.7.5.0 0.10.8.1.0             TRUE
glue             1.6.0      1.6.1              TRUE
magrittr         2.0.1      2.0.2              TRUE
pillar           1.6.4      1.6.5             FALSE
```

```
> library(FSA)
## FSA v0.9.1. See citation('FSA') if used in publication.
## Run fishR() for related website and fishR('IFAR') for related book.
> library(FSAdata)
Error in library(FSAdata) : there is no package called 'FSAdata'
> library(magrittr,)
> library(magrittr)
> library(dplyr)

Attaching package: 'dplyr'

The following objects are masked from 'package:stats':

    filter, lag

The following objects are masked from 'package:base':

    intersect, setdiff, setequal, union

> library(lotrix)
Error in library(lotrix) : there is no package called 'lotrix'
> library(plotrix)
> library(ggplot2)
> library(moments)
Error in library(moments) : there is no package called 'moments'
> library(moments)
Error in library(moments) : there is no package called 'moments'
> utils:::menuInstallPkgs()


> utils:::menuInstallPkgs()
trying URL 'https://cloud.r-project.org/bin/windows/contrib/4.1/moments_0.14.zip'
Content type 'application/zip' length 56288 bytes (54 KB)
downloaded 54 KB

package 'moments' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
        C:\Users\dhruvil patel\AppData\Local\Temp\Rtmpyme4vw\downloaded_packages
> library(moments)
> utils:::menuInstallPkgs()
trying URL 'https://cloud.r-project.org/bin/windows/contrib/4.1/FSAdata_0.3.8.zip'
Content type 'application/zip' length 914731 bytes (893 KB)
downloaded 893 KB

package 'FSAdata' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
        C:\Users\dhruvil patel\AppData\Local\Temp\Rtmpyme4vw\downloaded_packages
> library(FSAdata)
## FSAdata v0.3.8. See ?FSAdata to find data for specific fisheries analyses.
```

Q3)

```
> b <- BullTroutRML2
> b
   age  fl     lake     era
1   14 459 Harrison 1977-80
2   12 449 Harrison 1977-80
3   10 471 Harrison 1977-80
4   10 446 Harrison 1977-80
5    9 400 Harrison 1977-80
6    9 440 Harrison 1977-80
7    9 462 Harrison 1977-80
8    8 480 Harrison 1977-80
9    8 449 Harrison 1977-80
10   7 437 Harrison 1977-80
11   7 431 Harrison 1977-80
12   7 425 Harrison 1977-80
13   7 419 Harrison 1977-80
14   6 409 Harrison 1977-80
```

Q4)

```
> b[1:3,]
  age  fl     lake     era
1  14 459 Harrison 1977-80
2  12 449 Harrison 1977-80
3  10 471 Harrison 1977-80
```

```
> b[94:96,]
   age  fl   lake     era
94   4 298 Osprey 1997-01
95   3 279 Osprey 1997-01
96   3 273 Osprey 1997-01
>
```

Q5)

```
> bb<-filter(b,lake=='Harrison')
>
> bb
   age  fl     lake     era
1   14 459 Harrison 1977-80
2   12 449 Harrison 1977-80
3   10 471 Harrison 1977-80
4   10 446 Harrison 1977-80
5    9 400 Harrison 1977-80
6    9 440 Harrison 1977-80
7    9 462 Harrison 1977-80
8    8 480 Harrison 1977-80
9    8 449 Harrison 1977-80
10   7 437 Harrison 1977-80
11   7 431 Harrison 1977-80
12   7 425 Harrison 1977-80
13   7 419 Harrison 1977-80
14   6 409 Harrison 1977-80
15   6 397 Harrison 1977-80
16   5 419 Harrison 1977-80
17   5 381 Harrison 1977-80
18   5 363 Harrison 1977-80
19   5 351 Harrison 1977-80
20   4 372 Harrison 1977-80
21   2 199 Harrison 1977-80
22   2 184 Harrison 1977-80
23   1  91 Harrison 1977-80
24  12 440 Harrison 1997-01
25  11 428 Harrison 1997-01
26  10 440 Harrison 1997-01
27  10 422 Harrison 1997-01
28   9 434 Harrison 1997-01
29   9 415 Harrison 1997-01
30   9 406 Harrison 1997-01
31   8 434 Harrison 1997-01
32   8 406 Harrison 1997-01
```

Q6)

```
> bb[1:5,]
  age  fl     lake     era
1  14 459 Harrison 1977-80
2  12 449 Harrison 1977-80
3  10 471 Harrison 1977-80
4  10 446 Harrison 1977-80
5   9 400 Harrison 1977-80
```

```
> bb[57:61,]
   age  fl     lake     era
57   0  41 Harrison 1997-01
58   0  20 Harrison 1997-01
59   7 245 Harrison 1997-01
60   7 279 Harrison 1997-01
61   5 245 Harrison 1997-01
```

Q7)

```
> str(bb)
'data.frame':   61 obs. of  4 variables:
 $ age : int  14 12 10 10 9 9 9 8 8 7 ...
 $ fl  : int  459 449 471 446 400 440 462 480 449 437 ...
 $ lake: Factor w/ 2 levels "Harrison","Osprey": 1 1 1 1 1 1 1 1 1 1 ...
 $ era : Factor w/ 2 levels "1977-80","1997-01": 1 1 1 1 1 1 1 1 1 1 ...
```

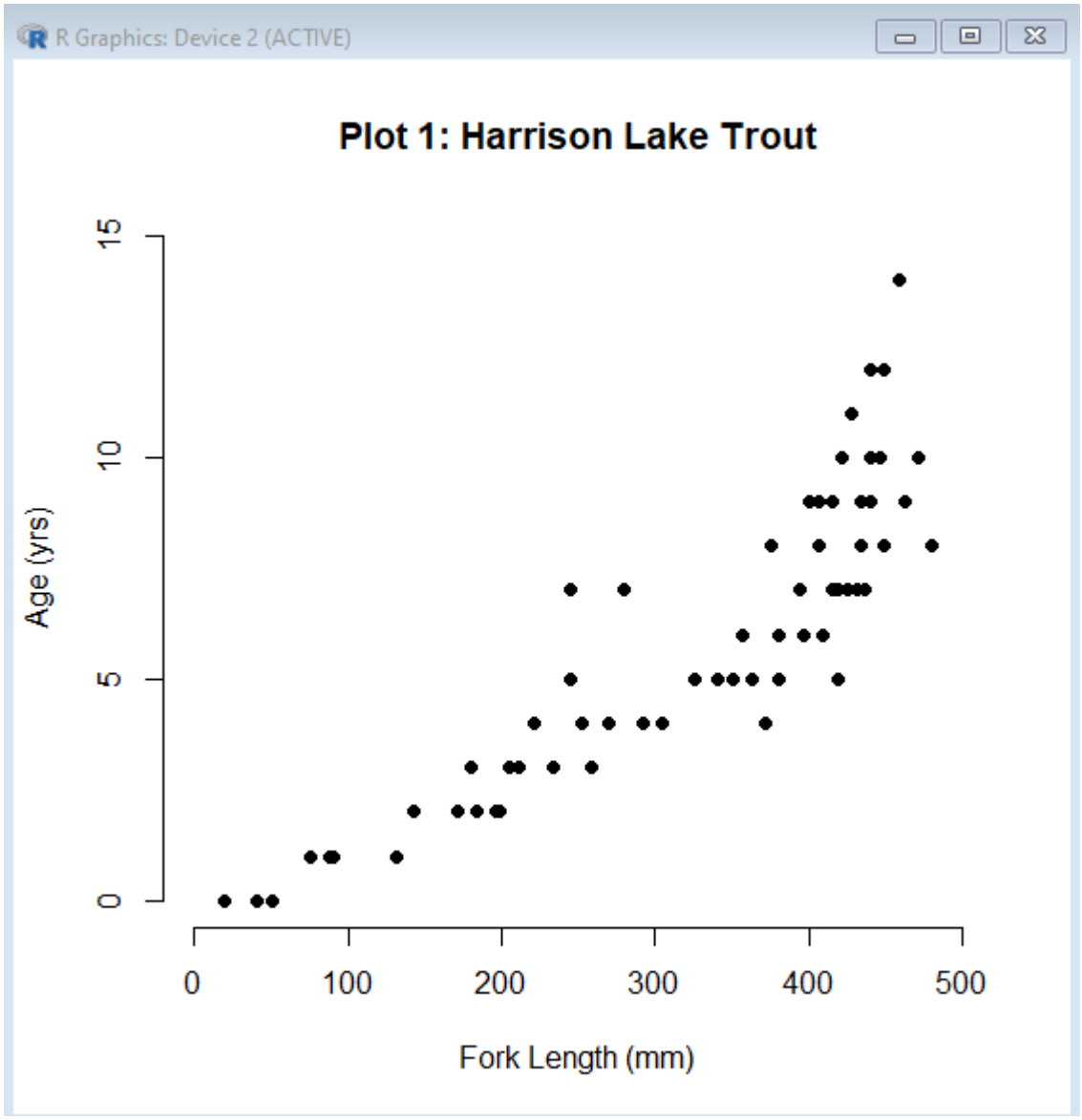
Q8)

Summary(b)

```
> summary(bb)
      age               fl            lake         era
 Min.   : 0.000   Min.   : 20   Harrison:61   1977-80:23
 1st Qu.: 3.000   1st Qu.:221   Osprey  : 0   1997-01:38
 Median : 6.000   Median :372
 Mean   : 5.754   Mean   :319
 3rd Qu.: 8.000   3rd Qu.:425
 Max.   :14.000   Max.   :480
```

Q9)

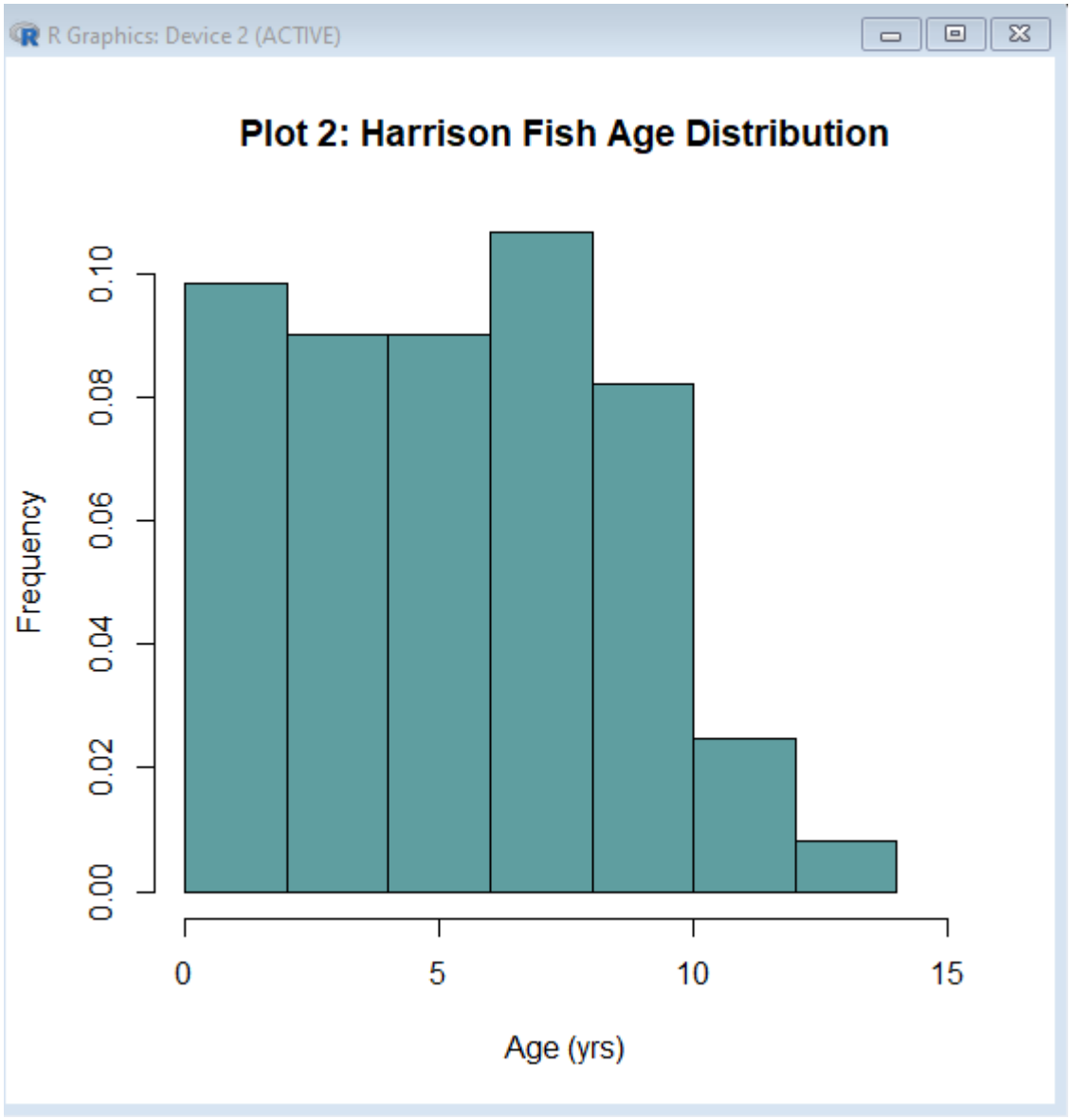
```
> x <- sc$fl
> y <- sc$age
> plot(x, y, main = "Plot 1: Harrison Lake Trout",
+      xlab = "Fork Length (mm)", ylab = "Age (yrs)",
+      pch = 19, frame = FALSE)
> x <- sc$fl
> y <- sc$age
> plot(x, y, main = "Plot 1: Harrison Lake Trout",
+      xlab = "Fork Length (mm)", ylab = "Age (yrs)",
+      xlim = c(0,500), ylim = c(0, 15),pch = 19, frame = FALSE)
>
```



b

Q10

```
hist(ecPage,main="Plot 2: Harrison Fish Age Distribution",xlab="Age (yrs)",ylab="Frequency",xlim=c(0,15),col="cadetblue",freq=FALSE)
```


R Graphics: Device 2 (ACTIVE)
Plot 2: Harrison Fish Age Distribution
Frequency
0.00
0.02
0.04
0.06
0.08
0.10
0
5
10
15
Age (yrs)

Q12)

```
b[1:3,]
 age  fl     lake     era
  14 459 Harrison 1977-80
  12 449 Harrison 1977-80
  10 471 Harrison 1977-80
k<- b[1:3,]
l<-[94:96,]
:ror: unexpected '[' in "l<-["
l<-b[94:96,]
k
 age  fl     lake     era
  14 459 Harrison 1977-80
  12 449 Harrison 1977-80
  10 471 Harrison 1977-80
l
  age  fl   lake     era
    4 298 Osprey 1997-01
    3 279 Osprey 1997-01
    3 273 Osprey 1997-01
oo<- data.frame(k,l)
oo
 age  fl     lake     era age.1 fl.1 lake.1   era.1
  14 459 Harrison 1977-80     4  298 Osprey 1997-01
  12 449 Harrison 1977-80     3  279 Osprey 1997-01
  10 471 Harrison 1977-80     3  273 Osprey 1997-01
```

Q14

```
> bbbb<-data.frame(age=c(4,12,10,77,5),fl=c(459,449,345,279,245),era=c('1977-80$
> pchs<-c('+','x')
> cols<-c("red",'gray60')
```

The summary of the information learned is as followed.

A scatter plot is a set of dotted points to represent individual pieces of data in the horizontal and vertical axis. A graph in which the values of two variables are plotted along X-axis and Y-axis, the pattern of the resulting points reveals a correlation between them.

Syntax: plot(x, y, main, xlab, ylab, xlim, ylim, axes)

Packages in R Programming language are a set of R functions, compiled code, and sample data. These are stored under a directory called "library" within the R environment. By default, R installs a group of packages during installation. Once we start the R console, only the default packages are available by default.

The filter() function is used to subset a data frame, retaining all rows that satisfy your conditions.

The select function is used to choose a subset of variables or columns from a data set. To use this function the dplyr package should be installed and loaded first.

Bibliography:

http://127.0.0.1:18828/library/vcd/html/00Index.html

https://cran.r-project.org/mirrors.html

http://127.0.0.1:18828/doc/html/packages.html

https://rdrr.io/cran/vcd/

https://r-forge.r-project.org/R/?group_id=351

https://www.geeksforgeeks.org/scatter-plots-in-r-language/

R in action book