NAME – ANSH GOEL

REG NO. – 20BCE1798

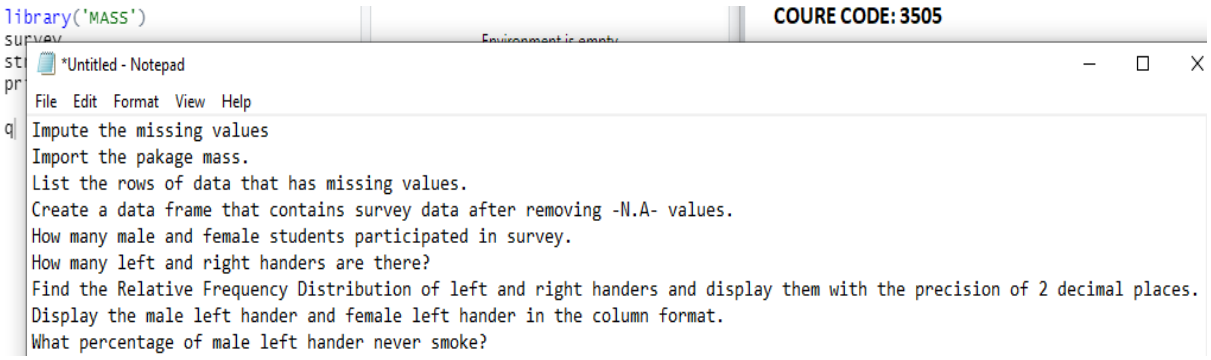
COURSE NAME – FOUNDATION OF DATA ANALYTICS (FDA)

COURE CODE: 3505

DATE – 15TH August, 2020

Lab 6 – Imputing the missing values

QUESTIONS:



Q1) Import the Package Mass.

```
#Importing package Mass

install.package("MASS")
library('MASS')
survey
str(survey)
print(colnames(survey))
```

OUTPUT:

```
> library(MASS)
> survey
      Sex Wr.Hnd NW.Hnd W.Hnd    Fold Pulse    Clap Exer Smoke Height      M.I    Age
1  Female   18.5   18.0 Right  R on L    92    Left Some Never 173.00   Metric 18.250
2    Male   19.5   20.5  Left  R on L   104    Left None Regul 177.80 Imperial 17.583
3    Male   18.0   13.3 Right  L on R    87 Neither None Occas     NA     <NA> 16.917
4    Male   18.8   18.9 Right  R on L    NA Neither None Never 160.00   Metric 20.333
5    Male   20.0   20.0 Right Neither    35   Right Some Never 165.00   Metric 23.667
6  Female   18.0   17.7 Right  L on R    64   Right Some Never 172.72 Imperial 21.000
7    Male   17.7   17.7 Right  L on R    83   Right Freq Never 182.88 Imperial 18.833
8  Female   17.0   17.3 Right  R on L    74   Right Freq Never 157.00   Metric 35.833
9    Male   20.0   19.5 Right  R on L    72   Right Some Never 175.00   Metric 19.000
10   Male   18.5   18.5 Right  R on L    90   Right Some Never 167.00   Metric 22.333
11 Female   17.0   17.2 Right  L on R    80   Right Freq Never 156.20 Imperial 28.500
12   Male   21.0   21.0 Right  R on L    68    Left Freq Never     NA     <NA> 18.250
13 Female   16.0   16.0 Right  L on R    NA   Right Some Never 155.00   Metric 18.750
14 Female   19.5   20.2 Right  L on R    66 Neither Some Never 155.00   Metric 17.500
15   Male   16.0   15.5 Right  R on L    60   Right Some Never     NA     <NA> 17.167
16 Female   17.5   17.0 Right  R on L    NA   Right Freq Never 156.00   Metric 17.167
17 Female   18.0   18.0 Right  L on R    89 Neither Freq Never 157.00   Metric 19.333
18   Male   19.4   19.2  Left  R on L    74   Right Some Never 182.88 Imperial 18.333
19   Male   20.5   20.5 Right  L on R    NA    Left Some Never 190.50 Imperial 19.750
20   Male   21.0   20.9 Right  R on L    78   Right Freq Never 177.00   Metric 17.917
21   Male   21.5   22.0 Right  R on L    72    Left Freq Never 190.50 Imperial 17.917
22   Male   20.1   20.7 Right  L on R    72   Right Freq Never 180.34 Imperial 18.167
23   Male   18.5   18.0 Right  L on R    64   Right Freq Never 180.34 Imperial 17.833
24   Male   21.5   21.2 Right  R on L    62   Right Some Never 184.00   Metric 18.250
25 Female   17.0   17.5 Right  R on L    64    Left Some Never     NA     <NA> 19.167
26   Male   18.5   18.5 Right Neither    90 Neither Some Never     NA     <NA> 17.583
27   Male   21.0   20.7 Right  R on L    90   Right Some Never 172.72 Imperial 17.500
28   Male   20.8   21.4 Right  R on L    62 Neither Freq Never 175.26 Imperial 18.083
29   Male   17.8   17.8 Right  L on R    76 Neither Freq Never     NA     <NA> 21.917
30   Male   19.5   19.5 Right  L on R    79   Right Some Never 167.00   Metric 19.250
31 Female   18.5   18.0 Right  R on L    76   Right None Occas     NA     <NA> 41.583
32   Male   18.8   18.2 Right  L on R    78   Right Freq Never 180.00   Metric 17.500
33 Female   17.1   17.5 Right  R on L    72   Right Freq Heavy 166.40 Imperial 39.750
34   Male   20.1   20.0 Right  R on L    70   Right Some Never 180.00   Metric 17.167
35   Male   18.0   19.0 Right  L on R    54 Neither Some Regul     NA     <NA> 17.750
36   Male   22.2   21.0 Right  L on R    66   Right Freq Occas 190.00   Metric 18.000
37 Female   16.0   16.5 Right  L on R    NA   Right Some Never 168.00   Metric 19.000
38   Male   19.4   18.5 Right  R on L    72 Neither Freq Never 182.50   Metric 17.917
39   Male   22.0   22.0 Right  R on L    80   Right Some Never 185.00   Metric 35.500
40   Male   19.0   19.0 Right  R on L    NA Neither Freq Occas 171.00   Metric 19.917
41 Female   17.5   16.0 Right  L on R    NA   Right Some Never 169.00   Metric 17.500
42 Female   17.8   18.0 Right  R on L    72   Right Some Never 154.94 Imperial 17.083
43   Male     NA     NA Right  R on L    60    <NA> Some Never 172.00   Metric 28.583
44 Female   20.1   20.2 Right  L on R    80   Right Some Never 176.50 Imperial 17.500
45 Female   13.0   13.0  <NA>  L on R    70    Left Freq Never 180.34 Imperial 17.417
46   Male   17.0   17.5 Right  R on L    NA Neither Freq Never 180.34 Imperial 18.500
```

```
47   Male   23.2   22.7 Right  L on R    84    Left Freq Regul 180.00   Metric 18.917
48   Male   22.5   23.0 Right  R on L    96   Right None Never 170.00   Metric 19.417
49 Female   18.0   17.6 Right  R on L    60   Right Some Occas 168.00   Metric 18.417
50 Female   18.0   17.9 Right  R on L    50    Left None Never 165.00   Metric 30.750
51   Male   22.0   21.5  Left  R on L    55    Left Freq Never 200.00   Metric 18.500
52   Male   20.5   20.0 Right  L on R    68   Right Freq Never 190.00   Metric 17.500
53   Male   17.0   18.0 Right  L on R    78    Left Some Never 170.18 Imperial 18.333
54   Male   20.5   19.5 Right  L on R    56   Right Freq Never 179.00   Metric 17.417
55   Male   22.5   22.5 Right  R on L    65   Right Freq Regul 182.00   Metric 20.000
56   Male   18.5   18.5 Right  L on R    NA Neither Freq Never 171.00   Metric 18.333
57 Female   15.5   15.4 Right  R on L    70 Neither None Never 157.48 Imperial 17.167
58   Male   19.5   19.7 Right  R on L    72   Right Freq Never     NA     <NA> 17.417
59   Male   19.5   19.0 Right  L on R    62   Right Freq Never 177.80 Imperial 17.667
60   Male   20.6   21.0  Left  L on R    NA    Left Freq Occas 175.26 Imperial 18.417
61   Male   22.8   23.2 Right  R on L    66 Neither Freq Never 187.00   Metric 20.333
62 Female   18.5   18.2 Right  R on L    72 Neither Freq Never 167.64 Imperial 17.333
63 Female   19.6   19.7 Right  L on R    70   Right Freq Never 178.00   Metric 17.500
64 Female   18.7   18.0  Left  L on R    NA    Left None Never 170.00   Metric 19.833
65 Female   17.3   18.0 Right  L on R    64 Neither Freq Never 164.00   Metric 18.583
66   Male   19.5   19.8 Right Neither    NA   Right Freq Never 183.00   Metric 18.000
67 Female   19.0   19.1 Right  L on R    NA Neither Freq Never 172.00   Metric 30.667
68 Female   18.5   18.0 Right  R on L    64   Right Freq Never     NA     <NA> 16.917
69   Male   19.0   19.0 Right  L on R    NA   Right Some Never 180.00   Metric 19.917
70   Male   21.0   19.5 Right  L on R    80    Left None  <NA>     NA     <NA> 18.333
71 Female   18.0   17.5 Right  L on R    64    Left Freq Never 170.00   Metric 17.583
72   Male   19.4   19.5 Right  R on L    NA   Right Freq Heavy 176.00   Metric 17.833
73 Female   17.0   16.6 Right  R on L    68   Right Some Never 171.00   Metric 17.667
74 Female   16.5   17.0 Right  L on R    40    Left Freq Never 167.64 Imperial 17.417
75 Female   15.6   15.8 Right  R on L    88    Left Some Never 165.00   Metric 17.750
76 Female   17.5   17.5 Right Neither    68   Right Freq Heavy 170.00   Metric 20.667
77 Female   17.0   17.6 Right  L on R    76   Right Some Never 165.00   Metric 23.583
78 Female   18.6   18.0 Right  L on R    NA Neither Freq Heavy 165.10 Imperial 17.167
79 Female   18.3   18.5 Right  R on L    68 Neither Some Never 165.10 Imperial 17.083
80   Male   20.0   20.5 Right  L on R    NA   Right Freq Never 185.42 Imperial 18.750
81   Male   19.5   19.5  Left  R on L    66    Left Some Never     NA     <NA> 16.750
82   Male   19.2   18.9 Right  R on L    76   Right Freq Never 176.50 Imperial 20.167
83 Female   17.5   17.5 Right  R on L    98    Left Freq Never     NA     <NA> 17.667
 [ reached 'max' / getOption("max.print") -- omitted 154 rows ]
```

Q2) List the rows of data that has missing values

```
demo<-survey
missingrow<-subset(demo,is.na(demo$Sex)|is.na(demo$Wr.Hnd)|is.na(demo$NW.Hnd)|is.na(demo$W.Hnd)|is.na(demo$Fold)|is.na(demo$Pulse)|is.na(demo$Clap)|is.na(demo$Exer)|is.na(demo$Smoke)|is.na(demo$Height)|is.na(demo$M.I)|is.na(demo$Age))
misingrow
```

OUTPUT:

	Sex	Wr.Hnd	NW.Hnd	W.Hnd	Fold	Pulse	Clap	Exer	Smoke	Height	M.I	Age
3	Male	18.0	13.3	Right	L on R	87	Neither	None	Occas	NA	<NA>	16.917
4	Male	18.8	18.9	Right	R on L	NA	Neither	None	Never	160.00	Metric	20.333
12	Male	21.0	21.0	Right	R on L	68	Left	Freq	Never	NA	<NA>	18.250
13	Female	16.0	16.0	Right	L on R	NA	Right	Some	Never	155.00	Metric	18.750
15	Male	16.0	15.5	Right	R on L	60	Right	Some	Never	NA	<NA>	17.167
16	Female	17.5	17.0	Right	R on L	NA	Right	Freq	Never	156.00	Metric	17.167
19	Male	20.5	20.5	Right	L on R	NA	Left	Some	Never	190.50	Imperial	19.750
25	Female	17.0	17.5	Right	R on L	64	Left	Some	Never	NA	<NA>	19.167
26	Male	18.5	18.5	Right	Neither	90	Neither	Some	Never	NA	<NA>	17.583
29	Male	17.8	17.8	Right	L on R	76	Neither	Freq	Never	NA	<NA>	21.917
31	Female	18.5	18.0	Right	R on L	76	Right	None	Occas	NA	<NA>	41.583
35	Male	18.0	19.0	Right	L on R	54	Neither	Some	Regul	NA	<NA>	17.750
37	Female	16.0	16.5	Right	L on R	NA	Right	Some	Never	168.00	Metric	19.000
40	Male	19.0	19.0	Right	R on L	NA	Neither	Freq	Occas	171.00	Metric	19.917
41	Female	17.5	16.0	Right	L on R	NA	Right	Some	Never	169.00	Metric	17.500
43	Male	NA	NA	Right	R on L	60	<NA>	Some	Never	172.00	Metric	28.583
45	Female	13.0	13.0	<NA>	L on R	70	Left	Freq	Never	180.34	Imperial	17.417
46	Male	17.0	17.5	Right	R on L	NA	Neither	Freq	Never	180.34	Imperial	18.500
56	Male	18.5	18.5	Right	L on R	NA	Neither	Freq	Never	171.00	Metric	18.333
58	Male	19.5	19.7	Right	R on L	72	Right	Freq	Never	NA	<NA>	17.417
60	Male	20.6	21.0	Left	L on R	NA	Left	Freq	Occas	175.26	Imperial	18.417
64	Female	18.7	18.0	Left	L on R	NA	Left	None	Never	170.00	Metric	19.833
66	Male	19.5	19.8	Right	Neither	NA	Right	Freq	Never	183.00	Metric	18.000
67	Female	19.0	19.1	Right	L on R	NA	Neither	Freq	Never	172.00	Metric	30.667
68	Female	18.5	18.0	Right	R on L	64	Right	Freq	Never	NA	<NA>	16.917
69	Male	19.0	19.0	Right	L on R	NA	Right	Some	Never	180.00	Metric	19.917
70	Male	21.0	19.5	Right	L on R	80	Left	None	<NA>	NA	<NA>	18.333
72	Male	19.4	19.5	Right	R on L	NA	Right	Freq	Heavy	176.00	Metric	17.833
78	Female	18.6	18.0	Right	L on R	NA	Neither	Freq	Heavy	165.10	Imperial	17.167
80	Male	20.0	20.5	Right	L on R	NA	Right	Freq	Never	185.42	Imperial	18.750
81	Male	19.5	19.5	Left	R on L	66	Left	Some	Never	NA	<NA>	16.750
83	Female	17.5	17.5	Right	R on L	98	Left	Freq	Never	NA	<NA>	17.667
84	Female	17.0	17.4	Right	R on L	NA	Neither	Some	Never	NA	<NA>	17.167
90	Female	18.0	17.7	Left	R on L	92	Left	Some	Never	NA	<NA>	17.583
92	Female	17.5	18.0	Right	Neither	NA	Right	Some	Never	NA	<NA>	18.000
94	Female	18.2	18.5	Right	R on L	NA	Right	Some	Never	168.00	Metric	17.083
96	Female	19.0	18.8	Right	L on R	NA	Right	Some	Never	NA	<NA>	17.083
99	Male	19.5	19.4	Right	Neither	NA	Right	Freq	Never	165.00	Metric	18.083
101	Male	21.9	22.2	Right	R on L	NA	Right	Some	Never	187.00	Metric	18.917
103	Female	16.0	16.0	Right	Neither	NA	Right	Some	Never	159.00	Metric	20.833
107	Female	16.2	16.4	Right	R on L	NA	Right	Freq	Occas	172.00	Metric	17.000
108	Female	17.0	15.9	Right	R on L	85	Right	Freq	Never	NA	<NA>	18.500
121	Male	20.0	20.0	Right	R on L	80	Neither	Freq	Occas	NA	<NA>	17.500
126	Male	19.3	19.4	Right	R on L	NA	Right	Freq	Never	180.34	Imperial	19.833
133	Female	18.9	20.0	Right	R on L	86	Right	Some	Never	NA	<NA>	19.083
137	<NA>	19.8	19.0	Left	L on R	73	Neither	Freq	Never	172.00	Metric	21.500
139	Male	20.0	19.5	Right	L on R	NA	Right	Freq	Never	170.00	Metric	21.417
142	Female	18.3	19.0	Right	R on L	NA	Right	None	Never	165.00	Metric	21.083
157	Male	14.0	15.5	Right	L on R	NA	Neither	Freq	Heavy	NA	<NA>	21.083
159	Male	20.0	20.5	Right	R on L	NA	Right	None	Never	187.96	Imperial	19.667
162	Male	18.1	18.2	Left	Neither	NA	Right	Some	Never	168.00	Metric	21.167
165	Male	19.1	19.1	Right	Neither	NA	Right	Some	Never	177.00	Metric	19.917
169	Male	19.0	18.5	Right	L on R	NA	Neither	Freq	Never	189.00	Metric	17.417
171	Female	16.5	17.0	Right	L on R	NA	Right	Some	Never	168.00	Metric	73.000
173	Female	15.5	15.5	Right	Neither	50	Right	Some	Regul	NA	<NA>	18.500
179	Female	20.5	20.5	Right	R on L	NA	Left	Freq	Regul	NA	<NA>	19.250
195	Female	16.7	15.1	Right	Neither	NA	Right	None	Never	157.48	Imperial	18.167
203	Female	18.8	17.8	Right	R on L	76	Right	Some	Never	NA	<NA>	18.583
210	Female	20.8	20.7	Right	R on L	NA	Neither	Freq	Never	171.50	Metric	18.500
213	Male	18.0	18.5	Right	R on L	78	Right	Freq	Never	NA	<NA>	17.500
216	Male	19.5	20.0	Right	Neither	NA	Right	Some	Never	170.00	Metric	21.250
217	Female	16.3	16.2	Right	L on R	NA	Right	None	Never	NA	<NA>	19.250
219	Female	17.0	17.3	Right	L on R	NA	Neither	Freq	Never	173.00	Metric	19.167
221	Male	23.2	23.3	Right	L on R	NA	Right	None	Heavy	171.00	Metric	20.917
224	Female	17.5	17.6	Right	L on R	NA	Right	Freq	Never	150.00	Metric	20.750
225	Female	17.6	17.2	Right	L on R	NA	Right	Some	Never	NA	<NA>	19.917
226	Female	17.5	17.8	Right	R on L	96	Right	Some	Never	NA	<NA>	18.667
232	Male	18.0	16.0	Right	R on L	NA	Right	Some	Never	180.34	Imperial	20.750
235	Female	17.5	16.5	Right	R on L	NA	Right	Some	Never	170.00	Metric	18.583

Q3) Create a data frame that contains survey data after removing -N.A- values

```
d=data.frame(survey)
d1=na.omit(d)
d1
```

OUTPUT:

```
> d=data.frame(survey)
> d1=na.omit(d)
> d1
       Sex Wr.Hnd NW.Hnd W.Hnd    Fold Pulse    Clap Exer Smoke Height      M.I    Age
1   Female   18.5   18.0 Right  R on L    92    Left Some Never 173.00   Metric 18.250
2     Male   19.5   20.5  Left  R on L   104    Left None Regul 177.80 Imperial 17.583
5     Male   20.0   20.0 Right Neither    35   Right Some Never 165.00   Metric 23.667
6   Female   18.0   17.7 Right  L on R    64   Right Some Never 172.72 Imperial 21.000
7     Male   17.7   17.7 Right  L on R    83   Right Freq Never 182.88 Imperial 18.833
8   Female   17.0   17.3 Right  R on L    74   Right Freq Never 157.00   Metric 35.833
9     Male   20.0   19.5 Right  R on L    72   Right Some Never 175.00   Metric 19.000
10    Male   18.5   18.5 Right  R on L    90   Right Some Never 167.00   Metric 22.333
11  Female   17.0   17.2 Right  L on R    80   Right Freq Never 156.20 Imperial 28.500
14  Female   19.5   20.2 Right  L on R    66 Neither Some Never 155.00   Metric 17.500
17  Female   18.0   18.0 Right  L on R    89 Neither Freq Never 157.00   Metric 19.333
18    Male   19.4   19.2  Left  R on L    74   Right Some Never 182.88 Imperial 18.333
20    Male   21.0   20.9 Right  R on L    78   Right Freq Never 177.00   Metric 17.917
21    Male   21.5   22.0 Right  R on L    72    Left Freq Never 190.50 Imperial 17.917
22    Male   20.1   20.7 Right  L on R    72   Right Freq Never 180.34 Imperial 18.167
23    Male   18.5   18.0 Right  L on R    64   Right Freq Never 180.34 Imperial 17.833
24    Male   21.5   21.2 Right  R on L    62   Right Some Never 184.00   Metric 18.250
27    Male   21.0   20.7 Right  R on L    90   Right Some Never 172.72 Imperial 17.500
28    Male   20.8   21.4 Right  R on L    62 Neither Freq Never 175.26 Imperial 18.083
30    Male   19.5   19.5 Right  L on R    79   Right Some Never 167.00   Metric 19.250
32    Male   18.8   18.2 Right  L on R    78   Right Freq Never 180.00   Metric 17.500
33  Female   17.1   17.5 Right  R on L    72   Right Freq Heavy 166.40 Imperial 39.750
34    Male   20.1   20.0 Right  R on L    70   Right Some Never 180.00   Metric 17.167
36    Male   22.2   21.0 Right  L on R    66   Right Freq Occas 190.00   Metric 18.000
38    Male   19.4   18.5 Right  R on L    72 Neither Freq Never 182.50   Metric 17.917
39    Male   22.0   22.0 Right  R on L    80   Right Some Never 185.00   Metric 35.500
42  Female   17.8   18.0 Right  R on L    72   Right Some Never 154.94 Imperial 17.083
44  Female   20.1   20.2 Right  L on R    80   Right Some Never 176.50 Imperial 17.500
47    Male   23.2   22.7 Right  L on R    84    Left Freq Regul 180.00   Metric 18.917
48    Male   22.5   23.0 Right  R on L    96   Right None Never 170.00   Metric 19.417
49  Female   18.0   17.6 Right  R on L    60   Right Some Occas 168.00   Metric 18.417
50  Female   18.0   17.9 Right  R on L    50    Left None Never 165.00   Metric 30.750
51    Male   22.0   21.5  Left  R on L    55    Left Freq Never 200.00   Metric 18.500
```

```
77  Female   17.0   17.6 Right  L on R    76   Right Some Never 165.00   Metric 23.583
79  Female   18.3   18.5 Right  R on L    68 Neither Some Never 165.10 Imperial 17.083
82    Male   19.2   18.9 Right  R on L    76   Right Freq Never 176.50 Imperial 20.167
85    Male   23.0   23.5 Right  L on R    90   Right Freq Never 167.64 Imperial 17.167
86  Female   17.7   17.0 Right  R on L    76   Right Some Never 167.00   Metric 17.250
87  Female   18.2   18.0 Right  L on R    70   Right Some Never 162.56 Imperial 18.000
88  Female   18.3   18.5 Right  R on L    75    Left Freq Never 170.00   Metric 18.750
89    Male   18.0   18.0 Right Neither    60   Right Freq Never 179.00   Metric 21.583
91    Male   20.5   20.0 Right  R on L    75    Left Some Never 183.00   Metric 19.667
93  Female   18.2   17.5 Right  L on R    70   Right Some Never 165.00   Metric 19.667
95    Male   21.3   20.8 Right  R on L    65   Right Freq Heavy 179.00   Metric 22.833
97    Male   20.0   19.5 Right  R on L    68 Neither Freq Regul 190.00   Metric 19.417
98  Female   17.5   17.5 Right  R on L    60   Right Freq Never 166.50   Metric 23.250
100 Female   19.4   19.6 Right  R on L    68 Neither Freq Never 175.26 Imperial 19.083
102   Male   18.9   19.1 Right  L on R    60 Neither None Never 170.00   Metric 17.750
104 Female   17.5   17.3 Right  R on L    72   Right Freq Never 175.00   Metric 20.167
105 Female   17.5   17.0 Right  R on L    80    Left Some Heavy 163.00   Metric 17.667
106 Female   19.5   18.5 Right  R on L    80   Right Some Never 170.00   Metric 18.250
109   Male   17.5   17.5 Right  L on R    64 Neither Freq Never 180.00   Metric 18.583
110   Male   19.7   20.1 Right  R on L    67    Left Some Regul 180.34 Imperial 17.750
111 Female   18.5   18.5 Right  R on L    76    Left Freq Never 175.00   Metric 24.167
112   Male   19.2   19.6 Right  L on R    80   Right None Never 190.50 Imperial 18.167
113 Female   17.2   16.7 Right  R on L    75   Right Freq Never 170.18 Imperial 21.167
114   Male   20.5   21.0 Right  R on L    60   Right Freq Never 185.00   Metric 17.917
115 Female   16.0   15.5 Right  L on R    60    Left Freq Never 162.56 Imperial 17.417
116 Female   16.9   16.0 Right  L on R    70   Right None Never 158.00   Metric 20.500
117 Female   17.0   16.7 Right  R on L    70   Right Some Never 159.00   Metric 22.917
118   Male   23.0   22.0  Left  L on R    83    Left Some Heavy 193.04 Imperial 18.917
119 Female   18.5   18.0  Left  L on R   100 Neither Some Never 171.00   Metric 18.917
120   Male   21.0   20.4 Right  L on R   100   Right Freq Heavy 184.00   Metric 20.083
122   Male   22.5   22.5 Right  L on R    76   Right Freq Occas 177.00   Metric 18.250
123 Female   18.5   18.0 Right  R on L    92   Right Freq Never 172.00   Metric 17.500
124   Male   19.8   20.0  Left  L on R    59   Right Freq Never 180.00   Metric 17.417
125   Male   18.5   18.1 Right  L on R    66    Left Freq Never 175.26 Imperial 21.000
127 Female   16.0   16.0 Right  R on L    68   Right Freq Never 172.72 Imperial 17.667
 [ reached 'max' / getOption("max.print") -- omitted 85 rows ]
```

Q4) How many male and female students participated in the survey ?

```
s<-d$Sex
table(s)
```

OUTPUT:

```
> s<-d$Sex
> table(s)
s
Female   Male
   118    118
```

Q5) How many Left & Right handers are there?

```
table(d$W.Hnd)
```

OUTPUT:

```
> table(d$W.Hnd)

 Left Right
   18   218
> 
```

Q6) Find the Relative Frequency Distribution of left & right handers and display them with Precision of 2 decimal places

```
rf<-length(d$W.Hnd)/table(d$W.Hnd)
print(format(round(rf,2),nsmall = 2))
```

OUTPUT:

```
> rf<-table(d$W.Hnd)
> print(format(round(rf,2),nsmall = 2))
  Left  Right 
"0.08" "0.92" 
```

Q7) Display the male left handers and female left handers in column format

```
sub1<-subset(d,d$W.Hnd=="Left")
sub1
```

OUTPUT:

```
> sub1<-subset(d,d$W.Hnd=="Left")
> sub1
       Sex Wr.Hnd NW.Hnd W.Hnd    Fold Pulse    Clap Exer Smoke Height      M.I    Age
2     Male   19.5   20.5  Left  R on L   104    Left None Regul 177.80 Imperial 17.583
18    Male   19.4   19.2  Left  R on L    74   Right Some Never 182.88 Imperial 18.333
51    Male   22.0   21.5  Left  R on L    55    Left Freq Never 200.00   Metric 18.500
60    Male   20.6   21.0  Left  L on R    NA    Left Freq Occas 175.26 Imperial 18.417
64  Female   18.7   18.0  Left  L on R    NA    Left None Never 170.00   Metric 19.833
81    Male   19.5   19.5  Left  R on L    66    Left Some Never     NA     <NA> 16.750
90  Female   18.0   17.7  Left  R on L    92    Left Some Never     NA     <NA> 17.583
118   Male   23.0   22.0  Left  L on R    83    Left Some Heavy 193.04 Imperial 18.917
119 Female   18.5   18.0  Left  L on R   100 Neither Some Never 171.00   Metric 18.917
124   Male   19.8   20.0  Left  L on R    59   Right Freq Never 180.00   Metric 17.417
134 Female   15.4   16.4  Left  L on R    80    Left Freq Occas 160.02 Imperial 18.500
137   <NA>   19.8   19.0  Left  L on R    73 Neither Freq Never 172.00   Metric 21.500
145 Female   20.0   19.5  Left  R on L    68 Neither Freq Never 172.00   Metric 19.167
162   Male   18.1   18.2  Left Neither    NA   Right Some Never 168.00   Metric 21.167
172   Male   20.5   19.5  Left  L on R    80   Right Some Occas 182.88 Imperial 18.667
176 Female   19.0   18.5  Left  L on R   104    Left Freq Never 170.00   Metric 17.250
209   Male   17.5   17.0  Left  L on R    97 Neither None Never 165.00   Metric 19.500
212 Female   17.5   17.5  Left  R on L    83 Neither Some Never 163.00   Metric 17.250
```

Q8) What percentage of male left handers who never smoked?

```
sub2<-subset(d,d$Sex=="Male" & d$W.Hnd=="Left")
sub3<-subset(sub2,sub2$Smoke=="Never")
c1<-nrow(sub2)
c2<-nrow(sub3)
r<-(c2/c1)*100
print(format(round(r,2),nsmall=2))
```

OUTPUT:

```
> sub2<-subset(d,d$Sex=="Male" & d$W.Hnd=="Left")
> sub3<-subset(sub2,sub2$Smoke=="Never")
> c1<-nrow(sub2)
> c2<-nrow(sub3)
> r<-(c2/c1)*100
> print(format(round(r,2),nsmall=2))
[1] "60.00"
```