VIT-AP UNIVERSITY, ANDHRA PRADESH

CSE4027 – Data Analytics - Lab Sheet :2

Academic year: 2022-2023 **Branch/ Class:** B.Tech
Semester: Fall **Date: 17/09/22**
Faculty Name: Dr Syed Khasim **School:** SCOPE
Student name: M.Jaswanth **Reg. no.: 20BCD7171**

_____

Questions:

1. USE DIABETES.CSV

Code:

```
> setwd("C:/Users/20BCD7171/Downloads")
> d<-read.csv("Diabetes.csv")
> d
```

```
> setwd("C:/Users/20BCD7171/Downloads")
> d<-read.csv("Diabetes.csv")
> |
```

2. DISPLAY THE DATAFRAME

Code:

```
> d<-read.csv("Diabetes.csv")
> d
```

```
> d<-read.csv("Diabetes.csv")
> d
```

	id	chol	stab.glu	hdl	ratio	glyhb	location	age	gender	height	weight	frame	bp.1s	bp.1d	bp.2s	bp.2d	waist
1	1000	203	82	56	3.6	4.31	Buckingham	46	female	62	121	medium	118	59	NA	NA	29
2	1001	165	97	24	6.9	4.44	Buckingham	29	female	64	218	large	112	68	NA	NA	46
3	1002	228	92	37	6.2	4.64	Buckingham	58	female	61	256	large	190	92	185	92	49
4	1003	78	93	12	6.5	4.63	Buckingham	67	male	67	119	large	110	50	NA	NA	33
5	1005	249	90	28	8.9	7.72	Buckingham	64	male	68	183	medium	138	80	NA	NA	44
6	1008	248	94	69	3.6	4.81	Buckingham	34	male	71	190	large	132	86	NA	NA	36
7	1011	195	92	41	4.8	4.84	Buckingham	30	male	69	191	medium	161	112	161	112	46
8	1015	227	75	44	5.2	3.94	Buckingham	37	male	59	170	medium	NA	NA	NA	NA	34
9	1016	177	87	49	3.6	4.84	Buckingham	45	male	69	166	large	160	80	128	86	34
10	1022	263	89	40	6.6	5.78	Buckingham	55	female	63	202	small	108	72	NA	NA	45
11	1024	242	82	54	4.5	4.77	Louisa	60	female	65	156	medium	130	90	130	90	39
12	1029	215	128	34	6.3	4.97	Louisa	38	female	58	195	medium	102	68	NA	NA	42
13	1030	238	75	36	6.6	4.47	Louisa	27	female	60	170	medium	130	80	NA	NA	35
14	1031	183	79	46	4.0	4.59	Louisa	40	female	59	165	medium	NA	NA	NA	NA	37
15	1035	191	76	30	6.4	4.67	Louisa	36	male	69	183	medium	100	66	NA	NA	36
16	1036	213	83	47	4.5	3.41	Louisa	33	female	65	157	medium	130	90	120	96	37
17	1037	255	78	38	6.7	4.33	Louisa	50	female	65	183	medium	130	100	NA	NA	37
18	1041	230	112	64	3.6	4.53	Louisa	20	male	67	159	medium	100	90	NA	NA	31
19	1045	194	81	36	5.4	5.28	Louisa	36	male	64	126	medium	110	76	NA	NA	30
20	1250	196	206	41	4.8	11.24	Buckingham	62	female	65	196	large	178	90	NA	NA	46
21	1252	186	97	50	3.7	6.49	Buckingham	70	male	67	178	large	148	88	148	84	42
22	1253	234	65	76	3.1	4.67	Buckingham	47	male	67	230	large	137	100	149	110	45
23	1254	203	299	43	4.7	12.74	Buckingham	38	female	69	288	large	136	83	NA	NA	48
24	1256	281	92	41	6.9	5.56	Buckingham	66	female	62	185	large	158	88	160	88	48
25	1271	228	66	45	5.1	4.61	Buckingham	24	female	61	113	medium	100	70	110	70	33
26	1277	179	80	92	1.9	4.18	Buckingham	41	female	72	118	small	144	112	NA	NA	28
27	1280	232	87	30	7.7	5.10	Buckingham	37	male	68	252	large	140	95	NA	NA	43
28	1281	NA	74	NA	NA	4.28	Buckingham	48	male	68	100	small	120	85	NA	NA	27
29	1282	254	84	52	4.9	4.52	Buckingham	43	female	62	145	medium	125	70	NA	NA	31
30	1285	215	72	42	5.1	4.37	Louisa	40	male	70	189	medium	180	122	170	112	37
31	1301	177	101	36	4.9	5.11	Buckingham	42	female	65	174	medium	146	94	139	89	37
32	1303	182	85	43	4.2	4.47	Buckingham	52	male	68	139	large	130	90	NA	NA	29
33	1304	265	330	34	7.8	15.52	Buckingham	61	male	74	191	medium	170	88	168	80	39
34	1305	182	85	37	4.9	5.66	Buckingham	61	female	69	174	medium	176	86	180	90	49
35	1309	199	87	63	3.2	3.67	Buckingham	25	male	66	118	medium	120	78	NA	NA	32
36	1312	183	81	60	3.1	4.03	Buckingham	47	female	66	186	medium	140	97	NA	NA	39
37	1313	194	86	67	2.9	2.68	Buckingham	35	male	66	159	medium	115	64	NA	NA	31
38	1314	190	107	32	5.9	3.56	Buckingham	46	male	72	205	medium	NA	NA	NA	NA	46
39	1315	173	80	57	3.0	6.21	Buckingham	57	male	71	145	medium	124	64	NA	NA	31
40	1316	182	206	43	4.2	7.91	Buckingham	70	male	69	214	large	158	90	160	96	45
41	1317	136	81	51	2.7	4.58	Buckingham	22	male	66	160	large	105	85	NA	NA	35
42	1321	218	68	46	4.7	3.89	Buckingham	52	male	62	170	medium	142	79	NA	NA	40
43	1323	225	83	42	5.4	4.38	Buckingham	36	male	67	192	large	149	89	136	88	40
44	1326	262	84	38	6.9	NA	Buckingham	43	male	75	253	large	124	80	NA	NA	43
45	1500	213	76	40	5.3	5.96	Buckingham	72	female	59	137	large	130	60	NA	NA	40
46	1501	243	52	59	4.1	4.41	Buckingham	37	female	64	233	medium	110	82	NA	NA	49
47	1502	148	193	14	10.6	6.14	Buckingham	54	female	67	165	medium	140	65	NA	NA	42
48	2004	128	223	24	5.3	10.90	Buckingham	60	male	67	196	medium	110	68	NA	NA	42
49	2750	169	85	51	3.3	6.14	Buckingham	40	female	65	180	medium	106	82	NA	NA	40
50	2753	157	74	47	3.3	5.57	Buckingham	55	female	66	219	medium	150	82	142	78	43

3. HOW MANY ROWS AND COLUMNS ARE THERE?

```
> ncol(d)
[1]  19
>nrow(d)
[1]   403
```

```
> ncol(d)
[1] 19
> nrow(d)
[1] 403
>
```

4. FIND OUT THE COLUMNS NAMES IN THE DATAFRAME

Code:

>names(d)

```
> names(d)
 [1] "id"       "chol"     "stab.glu" "hdl"      "ratio"    "glyhb"    "location" "age"      "gender"   "height"
[11] "weight"   "frame"    "bp.1s"    "bp.1d"    "bp.2s"    "bp.2d"    "waist"    "hip"      "time.ppn"
```

5. ACCESS THE AGE COLUMN.

Code:

>d("age")

```
> d["age"]
    age
1    46      52   43   106   28                           346   34
2    29      53   65   107   31                           347   30
3    58      54   45   108   83     162   58              348   74
4    67      55   70   109   79     163   81              349   36
5    64      56   20   110   68     164   27              350   45
6    34      57   62   111   32     165   47              351   35
7    30      58   92   112   26     166   33              352   50
8    37      59   49   113   36     167   67              353   27
9    45      60   44   114   53     168   42              354   52
10   55      61   74   115   19     169   21              355   42
11   60      62   36   116   63     170   51              356   39
12   38      63   51   117   58     171   27              357   73
13   27      64   38   118   53     172   51              358   28
14   40      65   31   119   50     173   71              359   53
15   36      66   28   120   41     174   50              360   49
16   33      67   22   121   48     175   54              361   55
17   50      68   71   122   59     176   59              362   37
18   20      69   76   123   34     177   59              363   60
19   36      70   91   124   63     178   40              364   56
20   62      71   40   125   23     179   58              365   84
21   70      72   23   126   21     180   72              366   20
22   47      73   20   127   23     181   66              367   80
23   38      74   40   128   36     182   23              368   60
24   66      75   52   129   71     183   42              369   80
25   24      76   76   130   64     184   43              370   29
26   41      77   46   131   43     185   75              371   43
27   37      78   48   132   31     186   65              372   63
28   48      79   22   133   44     187   34              373   37
29   43      80   58   134   60     188   37              374   20
30   40      81   34   135   43     189   61              375   44
31   42      82   61   136   48     190   36              376   54
32   52      83   40   137   56     191   45              377   58
33   61      84   28   138   55     192   68              378   35
34   61      85   53   139   49     193   57              379   52
35   25      86   67   140   58     194   41              380   60
36   47      87   51   141   33     195   68              381   43
37   35      88   49   142   48     196   40              382   59
38   46      89   65   143   66     197   79              383   33
39   57      90   54   144   59     198   62              384   37
40   70      91   38   145   45     199   63              385   40
41   22      92   64   146   52     200   55              386   38
42   52      93   41   147   76     201   55              387   32
43   36      94   67   148   36     202   27              388   60
44   43      95   27   149   41     203   66              389   30
45   72      96   21   150   20     204   63              390   42
46   37      97   41   151   50     205   78              391   52
47   54      98   47   152   43     206   68              392   59
48   60      99   61   153   82     207   31              393   78
49   40      100  65   154   35     208   64              394   51
50   55      101  28   155   47     209   40              395   25
51   76      102  41   156   75     210   61              396   37
            103  37   157   62     211   28              397   54
            104  50   158   31     212   34              398   89
            105  57   159   50     213   63              399   53
                      160   39     214   55              400   51
                      161   33     215   26              401   29
                                   216   36              402   41
                                   217   40
```
....

6. DISPLAY THE NUMBER OF PEOPLE WHOSE AGE IS GREATER THAN 40.

Code:

```
x=d["age"]>40
x
```

```
> x=d["age"]>40
> x
            age
  [1,]    TRUE            [348,]    TRUE
  [2,]   FALSE            [349,]   FALSE
  [3,]    TRUE            [350,]    TRUE
  [4,]    TRUE            [351,]   FALSE
  [5,]    TRUE            [352,]    TRUE
  [6,]   FALSE            [353,]   FALSE
  [7,]   FALSE            [354,]    TRUE
  [8,]   FALSE            [355,]    TRUE
  [9,]    TRUE            [356,]   FALSE
 [10,]    TRUE            [357,]    TRUE
 [11,]    TRUE            [358,]   FALSE
 [12,]   FALSE            [359,]    TRUE
 [13,]   FALSE            [360,]    TRUE
 [14,]   FALSE            [361,]    TRUE
 [15,]   FALSE            [362,]   FALSE
 [16,]   FALSE            [363,]    TRUE
 [17,]    TRUE            [364,]    TRUE
 [18,]   FALSE            [365,]    TRUE
 [19,]   FALSE            [366,]   FALSE
 [20,]    TRUE            [367,]    TRUE
 [21,]    TRUE            [368,]    TRUE
 [22,]    TRUE            [369,]    TRUE
 [23,]   FALSE            [370,]   FALSE
 [24,]    TRUE            [371,]    TRUE
 [25,]   FALSE            [372,]    TRUE
 [26,]    TRUE            [373,]   FALSE
 [27,]   FALSE            [374,]   FALSE
 [28,]    TRUE            [375,]    TRUE
 [29,]    TRUE            [376,]    TRUE
 [30,]   FALSE            [377,]    TRUE
 [31,]    TRUE            [378,]   FALSE
 [32,]    TRUE            [379,]    TRUE
 [33,]    TRUE            [380,]    TRUE
 [34,]    TRUE            [381,]    TRUE
 [35,]   FALSE            [382,]    TRUE
 [36,]    TRUE            [383,]   FALSE
 [37,]   FALSE            [384,]   FALSE
 [38,]    TRUE            [385,]   FALSE
 [39,]    TRUE            [386,]   FALSE
 [40,]    TRUE            [387,]   FALSE
 [41,]   FALSE            [388,]    TRUE
 [42,]    TRUE            [389,]   FALSE
 [43,]   FALSE            [390,]    TRUE
 [44,]    TRUE            [391,]    TRUE
 [45,]    TRUE            [392,]    TRUE
 [46,]   FALSE            [393,]    TRUE
 [47,]    TRUE            [394,]    TRUE
 [48,]    TRUE            [395,]   FALSE
 [49,]   FALSE            [396,]   FALSE
 [50,]    TRUE            [397,]    TRUE
                          [398,]    TRUE
                          [399,]    TRUE
                          [400,]    TRUE
                          [401,]   FALSE
                          [402,]    TRUE
                          [403,]    TRUE
```

Code:

```
>length(x[x==TRUE])
```

```
> length(x[x==TRUE])
[1] 243
>
```

7. FIND OUT THE FEMALE DIABETIC PATIENTS OF AGE > 30

Code:
```
> f<-d[(d$age>30)&(d$gender=="female"), ]
f
```

```
> f<-d[(d$age>30)&(d$gender=="female"), ]
> f
      id chol stab.glu hdl ratio glyhb  location age gender height weight  frame
1   1000  203       82  56   3.6  4.31 Buckingham  46 female     62    121 medium
3   1002  228       92  37   6.2  4.64 Buckingham  58 female     61    256  large
10  1022  263       89  40   6.6  5.78 Buckingham  55 female     63    202  small
11  1024  242       82  54   4.5  4.77     Louisa  60 female     65    156 medium
12  1029  215      128  34   6.3  4.97     Louisa  38 female     58    195 medium
14  1031  183       79  46   4.0  4.59     Louisa  40 female     59    165 medium
16  1036  213       83  47   4.5  3.41     Louisa  33 female     65    157 medium
17  1037  255       78  38   6.7  4.33     Louisa  50 female     65    183 medium
20  1250  196      206  41   4.8 11.24 Buckingham  62 female     65    196  large
23  1254  203      299  43   4.7 12.74 Buckingham  38 female     69    288  large
24  1256  281       92  41   6.9  5.56 Buckingham  66 female     62    185  large
26  1277  179       80  92   1.9  4.18 Buckingham  41 female     72    118  small
29  1282  254       84  52   4.9  4.52 Buckingham  43 female     62    145 medium
31  1301  177      101  36   4.9  5.11 Buckingham  42 female     65    174 medium
34  1305  182       85  37   4.9  5.66 Buckingham  61 female     69    174 medium
36  1312  183       81  60   3.1  4.03 Buckingham  47 female     66    186 medium
42  1321  218       68  46   4.7  3.89 Buckingham  52 female     62    170 medium
45  1500  213       76  40   5.3  5.96 Buckingham  72 female     59    137  large
46  1501  243       52  59   4.1  4.41 Buckingham  37 female     64    233 medium
47  1502  148      193  14  10.6  6.14 Buckingham  54 female     67    165 medium
49  2750  169       85  51   3.3  6.14 Buckingham  40 female     65    180 medium
50  2753  157       74  47   3.3  5.57 Buckingham  55 female     66    219 medium
52  2756  237       87  41   5.8  5.35 Buckingham  43 female     64    181 medium
53  2757  212       97  45   4.7  6.33 Buckingham  65 female     61    187  large
54  2758  233       92  39   6.0  4.56 Buckingham  45 female     64    167  large
55  2762  289      111  50   5.8  9.39 Buckingham  70 female     60    220 medium
58  2770  165       94  69   2.4  4.98 Buckingham  92 female     62    217  large
59  2773  237      233  58   4.1 13.70 Buckingham  49 female     62    189  large
60  2774  218       88  39   5.6    NA Buckingham  44 female     66    191  large
61  2775  296      262  60   4.9 10.93 Buckingham  74 female     63    183  large
63  2778  443      185  23  19.3 14.31 Buckingham  51 female     70    235 medium
64  2780  145       85  29   5.0  3.99 Buckingham  38 female     NA    125   <NA>
68  2791  213      203  75   2.8 11.41 Buckingham  71 female     63    165 medium
69  2793  173      131  69   2.5  4.44 Buckingham  76 female     61    102 medium
70  2794  232      184 114   2.0  8.40 Buckingham  91 female     61    127   <NA>
74  3751  180       84  69   2.6  5.20 Buckingham  40 female     68    264 medium
```

8. FIND OUT THE DETAILS OF PATIENTS WHO ARE NOT FROM LOUSIA.
Code:
```
> x=d[d$location!="Louisa",]
> x
```

```
> x=d[d$location!="Louisa",]
> x
     id chol stab.glu hdl ratio glyhb   location age gender height weight  frame
1  1000  203       82  56   3.6  4.31 Buckingham  46 female     62    121 medium
2  1001  165       97  24   6.9  4.44 Buckingham  29 female     64    218  large
3  1002  228       92  37   6.2  4.64 Buckingham  58 female     61    256  large
4  1003   78       93  12   6.5  4.63 Buckingham  67   male     67    119  large
5  1005  249       90  28   8.9  7.72 Buckingham  64   male     68    183 medium
6  1008  248       94  69   3.6  4.81 Buckingham  34   male     71    190  large
7  1011  195       92  41   4.8  4.84 Buckingham  30   male     69    191 medium
8  1015  227       75  44   5.2  3.94 Buckingham  37   male     59    170 medium
9  1016  177       87  49   3.6  4.84 Buckingham  45   male     69    166  large
10 1022  263       89  40   6.6  5.78 Buckingham  55 female     63    202  small
20 1250  196      206  41   4.8 11.24 Buckingham  62 female     65    196  large
21 1252  186       97  50   3.7  6.49 Buckingham  70   male     67    178  large
22 1253  234       65  76   3.1  4.67 Buckingham  47   male     67    230  large
23 1254  203      299  43   4.7 12.74 Buckingham  38 female     69    288  large
24 1256  281       92  41   6.9  5.56 Buckingham  66 female     62    185  large
25 1271  228       66  45   5.1  4.61 Buckingham  24 female     61    113 medium
26 1277  179       80  92   1.9  4.18 Buckingham  41 female     72    118  small
27 1280  232       87  30   7.7  5.10 Buckingham  37   male     68    252  large
28 1281   NA       74  NA    NA  4.28 Buckingham  48   male     68    100  small
29 1282  254       84  52   4.9  4.52 Buckingham  43 female     62    145 medium
31 1301  177      101  36   4.9  5.11 Buckingham  42 female     65    174 medium
32 1303  182       85  43   4.2  4.47 Buckingham  52   male     68    139  large
33 1304  265      330  34   7.8 15.52 Buckingham  61   male     74    191 medium
34 1305  182       85  37   4.9  5.66 Buckingham  61 female     69    174 medium
35 1309  199       87  63   3.2  3.67 Buckingham  25   male     66    118 medium
36 1312  183       81  60   3.1  4.03 Buckingham  47 female     66    186 medium
37 1313  194       86  67   2.9  2.68 Buckingham  35   male     66    159 medium
38 1314  190      107  32   5.9  3.56 Buckingham  46   male     72    205 medium
39 1315  173       80  57   3.0  6.21 Buckingham  57   male     71    145 medium
40 1316  182      206  43   4.2  7.91 Buckingham  70   male     69    214  large
41 1317  136       81  51   2.7  4.58 Buckingham  22 female     66    160  large
42 1321  218       68  46   4.7  3.89 Buckingham  52 female     62    170 medium
43 1323  225       83  42   5.4  4.38 Buckingham  36   male     67    192  large
44 1326  262       84  38   6.9    NA Buckingham  43   male     75    253  large
45 1500  213       76  40   5.3  5.96 Buckingham  72 female     59    137  large
46 1501  243       52  59   4.1  4.41 Buckingham  37 female     64    233 medium
47 1502  148      193  14  10.6  6.14 Buckingham  54 female     67    165 medium
48 2004  128      223  24   5.3 10.90 Buckingham  60   male     67    196 medium
49 2750  169       85  51   3.3  6.14 Buckingham  40 female     65    180 medium
50 2753  157       74  47   3.3  5.57 Buckingham  55 female     66    219 medium
```

9. IF GLUCOSE LEVELS IN BLOOD IS > 7, DIAGNOSE AS DIABETIC BY ADDING A COLUMN TO THE DATA FRAME.

Code:

```
> l<-transform(d,diabetic=ifelse(glyhb>7.00,"YES","NO"))
> l
```

```
> l<-transform(d,diabetic=ifelse(glyhb>7.00,"YES","NO"))
> l
      id chol stab.glu hdl ratio glyhb   location age gender height weight  frame
1   1000  203       82  56   3.6  4.31 Buckingham  46 female     62    121 medium
2   1001  165       97  24   6.9  4.44 Buckingham  29 female     64    218  large
3   1002  228       92  37   6.2  4.64 Buckingham  58 female     61    256  large
4   1003   78       93  12   6.5  4.63 Buckingham  67   male     67    119  large
5   1005  249       90  28   8.9  7.72 Buckingham  64   male     68    183 medium
6   1008  248       94  69   3.6  4.81 Buckingham  34   male     71    190  large
7   1011  195       92  41   4.8  4.84 Buckingham  30   male     69    191 medium
8   1015  227       75  44   5.2  3.94 Buckingham  37   male     59    170 medium
9   1016  177       87  49   3.6  4.84 Buckingham  45   male     69    166  large
10  1022  263       89  40   6.6  5.78 Buckingham  55 female     63    202  small
11  1024  242       82  54   4.5  4.77     Louisa  60 female     65    156 medium
12  1029  215      128  34   6.3  4.97     Louisa  38 female     58    195 medium
13  1030  238       75  36   6.6  4.47     Louisa  27 female     60    170 medium
14  1031  183       79  46   4.0  4.59     Louisa  40 female     59    165 medium
15  1035  191       76  30   6.4  4.67     Louisa  36   male     69    183 medium
16  1036  213       83  47   4.5  3.41     Louisa  33 female     65    157 medium
17  1037  255       78  38   6.7  4.33     Louisa  50 female     65    183 medium
18  1041  230      112  64   3.6  4.53     Louisa  20   male     67    159 medium
19  1045  194       81  36   5.4  5.28     Louisa  36   male     64    126 medium
20  1250  196      206  41   4.8 11.24 Buckingham  62 female     65    196  large
21  1252  186       97  50   3.7  6.49 Buckingham  70   male     67    178  large
22  1253  234       65  76   3.1  4.67 Buckingham  47   male     67    230  large
23  1254  203      299  43   4.7 12.74 Buckingham  38 female     69    288  large
24  1256  281       92  41   6.9  5.56 Buckingham  66 female     62    185  large
25  1271  228       66  45   5.1  4.61 Buckingham  24 female     61    113 medium
26  1277  179       80  92   1.9  4.18 Buckingham  41 female     72    118  small
27  1280  232       87  30   7.7  5.10 Buckingham  37   male     68    252  large
28  1281   NA       74  NA    NA  4.28 Buckingham  48   male     68    100  small
29  1282  254       84  52   4.9  4.52 Buckingham  43 female     62    145 medium
30  1285  215       72  42   5.1  4.37     Louisa  40   male     70    189 medium
31  1301  177      101  36   4.9  5.11 Buckingham  42 female     65    174 medium
32  1303  182       85  43   4.2  4.47 Buckingham  52   male     68    139  large
33  1304  265      330  34   7.8 15.52 Buckingham  61   male     74    191 medium
34  1305  182       85  37   4.9  5.66 Buckingham  61 female     69    174 medium
35  1309  199       87  63   3.2  3.67 Buckingham  25   male     66    118 medium
36  1312  183       81  60   3.1  4.03 Buckingham  47 female     66    186 medium
37  1313  194       86  67   2.9  2.68 Buckingham  35   male     66    159 medium
38  1314  190      107  32   5.9  3.56 Buckingham  46   male     72    205 medium
39  1315  173       80  57   3.0  6.21 Buckingham  57   male     71    145 medium
40  1316  182      206  43   4.2  7.91 Buckingham  70   male     69    214  large
```

```
      bp.1s bp.1d bp.2s bp.2d waist hip time.ppn diabetic
1       118    59    NA    NA     29  38      720       NO
2       112    68    NA    NA     46  48      360       NO
3       190    92   185    92     49  57      180       NO
4       110    50    NA    NA     33  38      480       NO
5       138    80    NA    NA     44  41      300      YES
6       132    86    NA    NA     36  42      195       NO
7       161   112   161   112     46  49      720       NO
8        NA    NA    NA    NA     34  39     1020       NO
9       160    80   128    86     34  40      300       NO
10      108    72    NA    NA     45  50      240       NO
11      130    90   130    90     39  45      300       NO
12      102    68    NA    NA     42  50       90       NO
13      130    80    NA    NA     35  41      720       NO
14       NA    NA    NA    NA     37  43       60       NO
15      100    66    NA    NA     36  40      225       NO
16      130    90   120    96     37  41      240       NO
17      130   100    NA    NA     37  43      180       NO
18      100    90    NA    NA     31  39     1440       NO
```

10. WHICH FEMALE SUBJECTS FROM BUCKINGHAM ARE UNDER THE AGE OF 25?
Code:
> f<-d[(d$age>30)&(d$gender=="female"),]
>f

```
> f<-l[(l$age<25)&(l$gender=="female")&(l$location=="Buckingham"),]
> f
       id chol stab.glu hdl ratio glyhb  location age gender height weight  frame
25   1271  228       66  45   5.1  4.61 Buckingham  24 female     61    113 medium
41   1317  136       81  51   2.7  4.58 Buckingham  22 female     66    160  large
56   2763  193      106  63   3.1  6.35 Buckingham  20 female     68    274  small
67   2787  223       75  85   2.6  4.25 Buckingham  22 female     62    137 medium
72   3250  164       86  40   4.1  5.23 Buckingham  23 female     69    245  large
73   3750  170       69  64   2.7  4.39 Buckingham  20 female     64    161 medium
79   4506  217       81  60   3.6  3.93 Buckingham  22 female     71    223 medium
126 10001  132       99  34   3.9  4.01 Buckingham  21 female     65    169  large
169 15264  187       84  64   2.9  4.40 Buckingham  21 female     63    158  small
251 17790  146       79  41   3.6  4.76 Buckingham  19 female     60    135 medium
255 17800  149       77  49   3.0  4.50 Buckingham  20 female     62    115  small
275 20260  179       75  36   5.0  4.75 Buckingham  23 female     65    183 medium
283 20279  147       78  42   3.5  4.67 Buckingham  23 female     61    185   <NA>
     bp.1s bp.1d bp.2s bp.2d waist hip time.ppn diabetic
25     100    70   110    70    33  38      210       NO
41     105    85    NA    NA    35  40      720       NO
56     165   110   153   100    49  58       60       NO
67     120    70    NA    NA    28  35      960       NO
72     126    75    NA    NA    44  47      420       NO
73     108    70    NA    NA    37  40      120       NO
79     120    75    NA    NA    46  50      210       NO
126    112    62    NA    NA    39  43      180       NO
169    138    88    NA    NA    39  43      180       NO
251    108    58    NA    NA    33  40      240       NO
255    105    82    NA    NA    31  37      720       NO
275    120    80    NA    NA    43  45      720       NO
283    127    71    NA    NA    43  47      600       NO
> |
```

11. WHAT IS THEIR AVERAGE GLYHB?
Code:

```
> t<-mean(f$glyhb,na.rm=TRUE)
> t
```

```
> t<-mean(f$glyhb,na.rm=TRUE)
> t
[1] 4.648462
>
```

12. ARE ANY OF THEM DIABETIC?
Code:

```
> q<-nrow(f$d=="YES")
> q
```

```
> q<-nrow(f$d=="YES")
> q
NULL
>
```

13. FIND OUT EACH COLUMN TYPE IN THE DATAFRAME
Code:

```
> print(sapply(l,class))
```

```
> print(sapply(l,class))
        id        chol    stab.glu         hdl       ratio       glyhb    location
 "integer"   "integer"   "integer"   "integer"   "numeric"   "numeric" "character"
       age      gender      height      weight       frame       bp.1s       bp.1d
 "integer" "character"   "integer"   "integer" "character"   "integer"   "integer"
      bp.2s       bp.2d       waist         hip    time.ppn    diabetic
 "integer"   "integer"   "integer"   "integer"   "integer" "character"
>
```

14. PRODUCE THE SUMMARY OF THE DATAFRAME.
Code:

```
>print(summary(1))
```

```
> print(summary(1))
      id              chol          stab.glu           hdl             ratio       
 Min.   : 1000   Min.   : 78.0   Min.   : 48.0   Min.   : 12.00   Min.   : 1.500  
 1st Qu.: 4792   1st Qu.:179.0   1st Qu.: 81.0   1st Qu.: 38.00   1st Qu.: 3.200  
 Median :15766   Median :204.0   Median : 89.0   Median : 46.00   Median : 4.200  
 Mean   :15978   Mean   :207.8   Mean   :106.7   Mean   : 50.45   Mean   : 4.522  
 3rd Qu.:20336   3rd Qu.:230.0   3rd Qu.:106.0   3rd Qu.: 59.00   3rd Qu.: 5.400  
 Max.   :41756   Max.   :443.0   Max.   :385.0   Max.   :120.00   Max.   :19.300  
                 NA's   :1                       NA's   :1        NA's   :1        
     glyhb           location              age             gender              height     
 Min.   : 2.68   Length:403         Min.   :19.00   Length:403         Min.   :52.00  
 1st Qu.: 4.38   Class :character   1st Qu.:34.00   Class :character   1st Qu.:63.00  
 Median : 4.84   Mode  :character   Median :45.00   Mode  :character   Median :66.00  
 Mean   : 5.59                      Mean   :46.85                      Mean   :66.02  
 3rd Qu.: 5.60                      3rd Qu.:60.00                      3rd Qu.:69.00  
 Max.   :16.11                      Max.   :92.00                      Max.   :76.00  
 NA's   :13                                                            NA's   :5      
     weight          frame              bp.1s           bp.1d            bp.2s      
 Min.   : 99.0   Length:403         Min.   : 90.0   Min.   : 48.00   Min.   :110.0  
 1st Qu.:151.0   Class :character   1st Qu.:121.2   1st Qu.: 75.00   1st Qu.:138.0  
 Median :172.5   Mode  :character   Median :136.0   Median : 82.00   Median :149.0  
 Mean   :177.6                      Mean   :136.9   Mean   : 83.32   Mean   :152.4  
 3rd Qu.:200.0                      3rd Qu.:146.8   3rd Qu.: 90.00   3rd Qu.:161.0  
 Max.   :325.0                      Max.   :250.0   Max.   :124.00   Max.   :238.0  
 NA's   :1                          NA's   :5       NA's   :5        NA's   :262    
     bp.2d            waist            hip           time.ppn         diabetic      
 Min.   : 60.00   Min.   :26.0   Min.   :30.00   Min.   :   5.0   Length:403        
 1st Qu.: 84.00   1st Qu.:33.0   1st Qu.:39.00   1st Qu.:  90.0   Class :character  
 Median : 92.00   Median :37.0   Median :42.00   Median : 240.0   Mode  :character  
 Mean   : 92.52   Mean   :37.9   Mean   :43.04   Mean   : 341.2                     
 3rd Qu.:100.00   3rd Qu.:41.0   3rd Qu.:46.00   3rd Qu.: 517.5                     
 Max.   :124.00   Max.   :56.0   Max.   :64.00   Max.   :1560.0                     
 NA's   :262      NA's   :2      NA's   :2       NA's   :3                          
```

_____