RWorksheet_Josue#1.Rmd

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1.Set up a vector named age, consisting of 34, 28, 22, 36, 27, 18, 52, 39, 42, 29,35, 31, 27, 22, 37, 34, 19, 20, 57, 49, 50, 37, 46, 25, 17, 37, 42, 53, 41, 51, 35, 24, 33, 41.

1A. There are 34 data points

1B.

```
age <- c(34, 28, 22, 36, 27, 18, 52, 39, 42, 29,
35, 31, 27, 22, 37, 34, 19, 20, 57, 49, 50, 37, 46, 25, 17, 37, 42, 53, 41,
51, 35, 24, 33, 41)
length(age)
```

```
## [1] 34
```

2.Find the reciprocal of the values for age.

```
reciprocal <- 1/age
reciprocal
```

```
##  [1] 0.02941176 0.03571429 0.04545455 0.02777778 0.03703704 0.05555556
##  [7] 0.01923077 0.02564103 0.02380952 0.03448276 0.02857143 0.03225806
## [13] 0.03703704 0.04545455 0.02702703 0.02941176 0.05263158 0.05000000
## [19] 0.01754386 0.02040816 0.02000000 0.02702703 0.02173913 0.04000000
## [25] 0.05882353 0.02702703 0.02380952 0.01886792 0.02439024 0.01960784
## [31] 0.02857143 0.04166667 0.03030303 0.02439024
```

3.Assign also new_age <- c(age, 0, age).

```
new_age <- c(age, 0, age)
new_age
```

```
##  [1] 34 28 22 36 27 18 52 39 42 29 35 31 27 22 37 34 19 20 57 49 50 37 46 25 17
## [26] 37 42 53 41 51 35 24 33 41  0 34 28 22 36 27 18 52 39 42 29 35 31 27 22 37
## [51] 34 19 20 57 49 50 37 46 25 17 37 42 53 41 51 35 24 33 41
```

```
length(new_age)
```

```
## [1] 69
```

- After running the said code chunk the new_age object iterated what is defined in the parentheses specifically the vector in age, a O , and another iteraton of age which resulted to 69 data points overall.

4.Sort the values for age.

```
sort(age)
```

```
##  [1] 17 18 19 20 22 22 24 25 27 27 28 29 31 33 34 34 35 35 36 37 37 37 39 41 41
## [26] 42 42 46 49 50 51 52 53 57
```

5.Find the minimum and maximum value for age.

```
min(age)
```

```
## [1] 17
```

```
max(age)
```

```
## [1] 57
```

6.Set up a vector named data, consisting of 2.4, 2.8, 2.1, 2.5, 2.4, 2.2, 2.5, 2.3, 2.5, 2.3, 2.4, and 2.7.

6A. There are 12 data points

6B.

```
data <- c(2.4, 2.8, 2.1, 2.5, 2.4, 2.2, 2.5,
2.3, 2.5, 2.3, 2.4, 2.7)
length(data)
```

```
## [1] 12
```

7.Generates a new vector for data where you double every value of the data. | What happen to the data?

```
new_data <- data*2
new_data
```

```
##  [1] 4.8 5.6 4.2 5.0 4.8 4.4 5.0 4.6 5.0 4.6 4.8 5.4
```

- All elements of the data object were doubled

8.Generate a sequence for the following scenario:

8.1. Integers from 1 to 100.

```
hundred <-seq(1,100)
hundred
```

```
##   [1]   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18
##  [19]  19  20  21  22  23  24  25  26  27  28  29  30  31  32  33  34  35  36
##  [37]  37  38  39  40  41  42  43  44  45  46  47  48  49  50  51  52  53  54
##  [55]  55  56  57  58  59  60  61  62  63  64  65  66  67  68  69  70  71  72
##  [73]  73  74  75  76  77  78  79  80  81  82  83  84  85  86  87  88  89  90
##  [91]  91  92  93  94  95  96  97  98  99 100
```

8.2. Numbers from 20 to 60

```
even<-seq(20,60)
even
```

```
##  [1] 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44
## [26] 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
```

8.3. Mean of numbers from 20 to 60

```
mean <- mean(even)
mean
```

```
## [1] 40
```

8.4. Sum of numbers from 51 to 91

```
sum <-sum(51:91)
sum
```

```
## [1] 2911
```

8.5. Integers from 1 to 1,000

```r
thousand <- seq(1,1000)
thousand
```

```
##    [1]    1    2    3    4    5    6    7    8    9   10   11   12   13   14
##   [15]   15   16   17   18   19   20   21   22   23   24   25   26   27   28
##   [29]   29   30   31   32   33   34   35   36   37   38   39   40   41   42
##   [43]   43   44   45   46   47   48   49   50   51   52   53   54   55   56
##   [57]   57   58   59   60   61   62   63   64   65   66   67   68   69   70
##   [71]   71   72   73   74   75   76   77   78   79   80   81   82   83   84
##   [85]   85   86   87   88   89   90   91   92   93   94   95   96   97   98
##   [99]   99  100  101  102  103  104  105  106  107  108  109  110  111  112
##  [113]  113  114  115  116  117  118  119  120  121  122  123  124  125  126
##  [127]  127  128  129  130  131  132  133  134  135  136  137  138  139  140
##  [141]  141  142  143  144  145  146  147  148  149  150  151  152  153  154
##  [155]  155  156  157  158  159  160  161  162  163  164  165  166  167  168
##  [169]  169  170  171  172  173  174  175  176  177  178  179  180  181  182
##  [183]  183  184  185  186  187  188  189  190  191  192  193  194  195  196
##  [197]  197  198  199  200  201  202  203  204  205  206  207  208  209  210
##  [211]  211  212  213  214  215  216  217  218  219  220  221  222  223  224
##  [225]  225  226  227  228  229  230  231  232  233  234  235  236  237  238
##  [239]  239  240  241  242  243  244  245  246  247  248  249  250  251  252
##  [253]  253  254  255  256  257  258  259  260  261  262  263  264  265  266
##  [267]  267  268  269  270  271  272  273  274  275  276  277  278  279  280
##  [281]  281  282  283  284  285  286  287  288  289  290  291  292  293  294
##  [295]  295  296  297  298  299  300  301  302  303  304  305  306  307  308
##  [309]  309  310  311  312  313  314  315  316  317  318  319  320  321  322
##  [323]  323  324  325  326  327  328  329  330  331  332  333  334  335  336
##  [337]  337  338  339  340  341  342  343  344  345  346  347  348  349  350
##  [351]  351  352  353  354  355  356  357  358  359  360  361  362  363  364
##  [365]  365  366  367  368  369  370  371  372  373  374  375  376  377  378
##  [379]  379  380  381  382  383  384  385  386  387  388  389  390  391  392
##  [393]  393  394  395  396  397  398  399  400  401  402  403  404  405  406
##  [407]  407  408  409  410  411  412  413  414  415  416  417  418  419  420
##  [421]  421  422  423  424  425  426  427  428  429  430  431  432  433  434
##  [435]  435  436  437  438  439  440  441  442  443  444  445  446  447  448
##  [449]  449  450  451  452  453  454  455  456  457  458  459  460  461  462
##  [463]  463  464  465  466  467  468  469  470  471  472  473  474  475  476
##  [477]  477  478  479  480  481  482  483  484  485  486  487  488  489  490
##  [491]  491  492  493  494  495  496  497  498  499  500  501  502  503  504
##  [505]  505  506  507  508  509  510  511  512  513  514  515  516  517  518
##  [519]  519  520  521  522  523  524  525  526  527  528  529  530  531  532
##  [533]  533  534  535  536  537  538  539  540  541  542  543  544  545  546
##  [547]  547  548  549  550  551  552  553  554  555  556  557  558  559  560
##  [561]  561  562  563  564  565  566  567  568  569  570  571  572  573  574
##  [575]  575  576  577  578  579  580  581  582  583  584  585  586  587  588
##  [589]  589  590  591  592  593  594  595  596  597  598  599  600  601  602
##  [603]  603  604  605  606  607  608  609  610  611  612  613  614  615  616
##  [617]  617  618  619  620  621  622  623  624  625  626  627  628  629  630
##  [631]  631  632  633  634  635  636  637  638  639  640  641  642  643  644
##  [645]  645  646  647  648  649  650  651  652  653  654  655  656  657  658
##  [659]  659  660  661  662  663  664  665  666  667  668  669  670  671  672
##  [673]  673  674  675  676  677  678  679  680  681  682  683  684  685  686
##  [687]  687  688  689  690  691  692  693  694  695  696  697  698  699  700
##  [701]  701  702  703  704  705  706  707  708  709  710  711  712  713  714
##  [715]  715  716  717  718  719  720  721  722  723  724  725  726  727  728
##  [729]  729  730  731  732  733  734  735  736  737  738  739  740  741  742
##  [743]  743  744  745  746  747  748  749  750  751  752  753  754  755  756
##  [757]  757  758  759  760  761  762  763  764  765  766  767  768  769  770
##  [771]  771  772  773  774  775  776  777  778  779  780  781  782  783  784
##  [785]  785  786  787  788  789  790  791  792  793  794  795  796  797  798
##  [799]  799  800  801  802  803  804  805  806  807  808  809  810  811  812
##  [813]  813  814  815  816  817  818  819  820  821  822  823  824  825  826
##  [827]  827  828  829  830  831  832  833  834  835  836  837  838  839  840
##  [841]  841  842  843  844  845  846  847  848  849  850  851  852  853  854
##  [855]  855  856  857  858  859  860  861  862  863  864  865  866  867  868
##  [869]  869  870  871  872  873  874  875  876  877  878  879  880  881  882
##  [883]  883  884  885  886  887  888  889  890  891  892  893  894  895  896
##  [897]  897  898  899  900  901  902  903  904  905  906  907  908  909  910
##  [911]  911  912  913  914  915  916  917  918  919  920  921  922  923  924
##  [925]  925  926  927  928  929  930  931  932  933  934  935  936  937  938
##  [939]  939  940  941  942  943  944  945  946  947  948  949  950  951  952
##  [953]  953  954  955  956  957  958  959  960  961  962  963  964  965  966
##  [967]  967  968  969  970  971  972  973  974  975  976  977  978  979  980
##  [981]  981  982  983  984  985  986  987  988  989  990  991  992  993  994
##  [995]  995  996  997  998  999 1000
```

8.5A. How many data points from 8.1 to 8.4?__________ - - There are 143 data points from 8.1 to 8.4

8.5B.

```r
total_length <- length(hundred) + length(even) + length(mean) + length(sum)
total_length
```

```
## [1] 143
```

8.5C

```r
seq_1_to_1000 <- 1:1000
max_to_10 <- max(seq_1_to_1000[seq_1_to_1000 <- 10])
max_to_10
```

```
## [1] 10
```

9. *Print a vector with the integers between 1 and 100 that are not divisible by 3, 5 and 7 using filter option.

```r
Filter(function(i) { all(i %% c(3,5,7) != 0) }, seq(100))
```

```
##  [1]  1  2  4  8 11 13 16 17 19 22 23 26 29 31 32 34 37 38 41 43 44 46 47 52 53
## [26] 58 59 61 62 64 67 68 71 73 74 76 79 82 83 86 88 89 92 94 97
```

10. Generate a sequence backwards of the integers from 1 to 100.

```r
ten <- seq(100,1)
ten
```

```
##   [1] 100  99  98  97  96  95  94  93  92  91  90  89  88  87  86  85  84  83
##  [19]  82  81  80  79  78  77  76  75  74  73  72  71  70  69  68  67  66  65
##  [37]  64  63  62  61  60  59  58  57  56  55  54  53  52  51  50  49  48  47
##  [55]  46  45  44  43  42  41  40  39  38  37  36  35  34  33  32  31  30  29
##  [73]  28  27  26  25  24  23  22  21  20  19  18  17  16  15  14  13  12  11
##  [91]  10   9   8   7   6   5   4   3   2   1
```

11.List all the natural numbers below 25 that are multiples of 3 or 5.Find the sum of these multiples.

```
numbers <- 1:24
multiples <- numbers[numbers %% 3 == 0 | numbers %% 5 == 0]
sum_multiples <- sum(multiples)
sum_multiples
```

```
## [1] 143
```

11A.- There are 136 data points

11B.Write the R code and its output from 10 and 11.

```
tenleven_len <- length(ten)+length(numbers) + length(multiples)+ length(sum_multiples)
tenleven_len
```

```
## [1] 136
```

12. Statements can be grouped together using braces '{' and '}'. A group of statements is sometimes called a block. Single statements are evaluated when a new line is typed at the end of the syntactically complete statement. Blocks are not evaluated until a new line is entered after the closing brace. Describe the output.

```
# x <- {0 + x + 5 + }
```

- The output results to an error due to missing values, the console also states this error message (Error: unexpected '}' in "x <- {0 + x + 5 + }")

13. *Set up a vector named score, consisting of 72, 86, 92, 63, 88, 89, 91, 92, 75, 75 and 77. To access individual elements of an atomic vector, one generally uses the x[i] construction. Find x[2] and x[3]. Write the R code and its output.

```
score <- c(72, 86, 92, 63, 88, 89, 91, 92, 75, 75, 77)
element_2 <- score[2]
element_3 <- score[3]

element_2
```

```
## [1] 86
```

```
element_3
```

```
## [1] 92
```

14. *Create a vector a = c(1,2,NA,4,NA,6,7).

14A.Change the NA to 999 using the codes print(a,na.print="-999").

```
a <- c(1,2,NA,4,NA,6,7)
print(a,na.print="-999")
```

```
## [1]    1    2 -999    4 -999    6    7
```

14B. Write the R code and its output. Describe the output. - The NA value in the vector is changed to -99 as per order of the print function. The statements in the parentheses are specificities .

15.A special type of function calls can appear on the left hand side of the assignment operator as in > class(x) <- "foo".

```
name = readline(prompt="Input your name: ")
```

```
## Input your name:
```

```r
age = readline(prompt="Input your age: ")
```

```
## Input your age:
```

```r
print(paste("My name is",name, "and I am",age ,"years old."))
```

```
## [1] "My name is  and I am  years old."
```

```r
print(R.version.string)
```

```
## [1] "R version 4.4.1 (2024-06-14)"
```

- This type of codes are similar to the functions scanf and input statements, this allow users to store data within an object. A very standard input process…