RWorksheet_Freires#1

2024-09-24

1. a. How many data points?

- 34 data points

b. Write the R code and its output

```
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.)
points <- length(age)
print(points)
```

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

2. Find the reciprocal of the values for age.

```
rec_age <-1 /age
print(rec_age)
```

```
##  [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. What happen to the new_age?

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

4. Sort the values for age.

```
age <- sort(age)
print(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.

```
minimum_age <- min(age)
maximum_age <- max(age)
print(minimum_age)
```

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

```
print(maximum_age)
```

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

6. a. How many data points?

- 12 data points

b. Write the R code and its output

```
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)
points <- length(data)
print(points)
```

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

7. Generates a new vector for data where you double every value of data.

```
double_d <- data * 2
print(double_d)
```

```
##  [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
```

What happen to the data? - The data increased by double

8. Generate a sequence for the following scenario: 8.1 Integers from 1 to 100.

```
integer <- seq(data)
1:100
```

```
##   [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

```
numbers <- seq(data)
20:60
```

```
##  [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_num <- mean(20:60)
print (mean_num)
```

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

8.4 Sum of numbers from 51 to 91

```
num <- sum(51:91)
total <- sum(num)
print(total)
```

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

8.5 Integers from 1 to 1,000

```
seq <- 1:1000
print(seq)
```

```
##    [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
```

a. How many data points from 8.1 to 8.4?

```r
length1 <- length(seq)
length2 <- length(numbers)
length3 <- length(mean_num)
length4 <- length(num)

sum(length1+length2+length3+length4)
```

```
## [1] 1014
```

b. Write the R code and its output from 8.1 to 8.4

```r
seq <- seq(1:100)
numbers <- seq(20:60)
mean_num <-(20:60)
num <-sum(51:91)
```

c. For 8.5 find only maximum data points util 10

```r
max <- 1:1000
answer <- max(max[t <- 10])
answer
```

```
## [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
backward <- seq(100, 1, by = -1)

print(backward)
```

```
##   [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]
print(multiples)
```

```
##  [1]  3  5  6  9 10 12 15 18 20 21 24
```

```
sum <- sum(multiples)
print(sum)
```

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

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.

x <- {0 + x + 5 }

Describe the output - The output is an error.

13. Find x[2] and x[3].

```
score <- c(72, 86, 92, 63, 88, 89, 91, 92, 75,
75, 77)
x2 <- score[2]
x3 <- score[3]
print(x2)
```

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

```
print(x3)
```

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

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

a. 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
```

Describe the output

- the vector contains character that replaces the missing numbers.

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:
```

```
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)"
```