FML ASSIGNMENT 1

2024-02-04

R Markdown

Source of my Dataset:

```
library(readr)
HeartFailure_Prediction<-
read.csv("C:/Users/deeks/Downloads/heart.csv")
View(HeartFailure_Prediction)
```

#The descriptive statistics for the dataset:

```
summary(HeartFailure_Prediction)

##       Age              Sex            ChestPainType        RestingBP
##  Min.   :28.00   Length:918         Length:918          Min.   :  0.0
##  1st Qu.:47.00   Class :character   Class :character    1st Qu.:120.0
##  Median :54.00   Mode  :character   Mode  :character    Median :130.0
##  Mean   :53.51                                          Mean   :132.4
##  3rd Qu.:60.00                                          3rd Qu.:140.0
##  Max.   :77.00                                          Max.   :200.0
##   Cholesterol      FastingBS         RestingECG          MaxHR
##  Min.   :  0.0   Min.   :0.0000   Length:918         Min.   : 60.0
##  1st Qu.:173.2   1st Qu.:0.0000   Class :character   1st Qu.:120.0
##  Median :223.0   Median :0.0000   Mode  :character   Median :138.0
##  Mean   :198.8   Mean   :0.2331                      Mean   :136.8
##  3rd Qu.:267.0   3rd Qu.:0.0000                      3rd Qu.:156.0
##  Max.   :603.0   Max.   :1.0000                      Max.   :202.0
##  ExerciseAngina      Oldpeak           ST_Slope            HeartDisease
##  Length:918       Min.   :-2.6000   Length:918         Min.   :0.0000
##  Class :character 1st Qu.: 0.0000   Class :character   1st Qu.:0.0000
##  Mode  :character Median : 0.6000   Mode  :character   Median :1.0000
##                   Mean   : 0.8874                      Mean   :0.5534
##                   3rd Qu.: 1.5000                      3rd Qu.:1.0000
##                   Max.   : 6.2000                      Max.   :1.0000
```

#The Qualitative Variables are:

```
summary(HeartFailure_Prediction$Sex)

##    Length     Class      Mode
##       918 character character
```

```
summary(HeartFailure_Prediction$ChestPainType)
```

```
##     Length     Class      Mode
##        918 character character
```

```
summary(HeartFailure_Prediction$RestingECG)
```

```
##     Length     Class      Mode
##        918 character character
```

```
summary(HeartFailure_Prediction$ExerciseAngina)
```

```
##     Length     Class      Mode
##        918 character character
```

```
summary(HeartFailure_Prediction$ST_Slope)
```

```
##     Length     Class      Mode
##        918 character character
```

#The Quantitative variables are"

```
summary(HeartFailure_Prediction$Age)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   28.00   47.00   54.00   53.51   60.00   77.00
```

```
summary(HeartFailure_Prediction$RestingBP)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##     0.0   120.0   130.0   132.4   140.0   200.0
```

```
summary(HeartFailure_Prediction$Cholesterol)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##     0.0   173.2   223.0   198.8   267.0   603.0
```

```
summary(HeartFailure_Prediction$FastingBS)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.0000  0.0000  0.0000  0.2331  0.0000  1.0000
```

```
summary(HeartFailure_Prediction$MaxHR)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##    60.0   120.0   138.0   136.8   156.0   202.0
```

```
summary(HeartFailure_Prediction$Oldpeak)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## -2.6000  0.0000  0.6000  0.8874  1.5000  6.2000
```

```
summary(HeartFailure_Prediction$HeartDisease)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.0000  0.0000  1.0000  0.5534  1.0000  1.0000
```

#MEAN OF CHOLESTROL

```
mean(HeartFailure_Prediction$Cholesterol)
```

```
## [1] 198.7996
```

#MEDIAN OF CHOLESTROL

```
median(HeartFailure_Prediction$Cholesterol)
```

```
## [1] 223
```

#MODE OF CHOLESTROL

```
mode<-function(x){
  n<-table(HeartFailure_Prediction$Cholesterol)
  which.max(n)
}
mode(HeartFailure_Prediction$Cholesterol)
```

```
## 0
## 1
```

#DESCRIPTIVE STATISTICS FOR A CATEGORIAL VARIABLE

```
table(HeartFailure_Prediction$Sex)
```

```
##
##   F   M
## 193 725
```

#TRANSFORMATION OF HEART FAILURE PREDICTION OF DATASET

```
transform(HeartFailure_Prediction$Oldpeak+ 1)
```

```
##     X_data
## 1      1.0
## 2      2.0
## 3      1.0
## 4      2.5
## 5      1.0
## 6      1.0
## 7      1.0
## 8      1.0
## 9      2.5
## 10     1.0
## 11     1.0
## 12     3.0
## 13     1.0
## 14     2.0
## 15     1.0
## 16     2.5
## 17     1.0
```

```
## 18      1.0
## 19      2.0
## 20      4.0
## 21      1.0
## 22      2.0
## 23      1.0
## 24      4.0
## 25      1.0
## 26      1.0
## 27      4.0
## 28      1.0
## 29      1.0
## 30      1.0
## 31      1.0
## 32      1.0
## 33      3.0
## 34      3.0
## 35      1.0
## 36      1.0
## 37      2.5
## 38      1.0
## 39      1.0
## 40      2.0
## 41      1.0
## 42      1.0
## 43      1.0
## 44      1.0
## 45      2.0
## 46      2.0
## 47      1.0
## 48      1.0
## 49      2.0
## 50      1.0
## 51      3.0
## 52      3.0
## 53      1.0
## 54      1.0
## 55      2.5
## 56      1.0
## 57      2.5
## 58      1.0
## 59      2.0
## 60      2.0
## 61      1.0
## 62      1.0
## 63      1.0
## 64      2.0
## 65      1.0
## 66      1.0
## 67      1.0
```

```
## 68      1.0
## 69      5.0
## 70      1.0
## 71      2.0
## 72      1.0
## 73      1.0
## 74      1.0
## 75      2.5
## 76      1.0
## 77      1.0
## 78      1.0
## 79      1.0
## 80      1.0
## 81      1.0
## 82      1.0
## 83      1.0
## 84      1.0
## 85      2.0
## 86      2.0
## 87      3.0
## 88      3.0
## 89      1.0
## 90      1.5
## 91      1.0
## 92      1.0
## 93      1.0
## 94      2.5
## 95      1.0
## 96      3.0
## 97      1.0
## 98      1.0
## 99      1.0
## 100     1.0
## 101     2.0
## 102     1.0
## 103     3.0
## 104     2.0
## 105     1.0
## 106     1.0
## 107     1.0
## 108     1.0
## 109     1.0
## 110     1.0
## 111     2.0
## 112     4.0
## 113     1.0
## 114     1.0
## 115     1.0
## 116     2.0
## 117     1.0
```

```
## 118      2.5
## 119      1.0
## 120      1.0
## 121      1.0
## 122      1.0
## 123      1.0
## 124      2.0
## 125      1.0
## 126      1.0
## 127      1.0
## 128      3.0
## 129      1.0
## 130      2.5
## 131      1.0
## 132      1.0
## 133      3.0
## 134      2.5
## 135      2.0
## 136      1.0
## 137      1.0
## 138      3.0
## 139      1.0
## 140      3.0
## 141      3.5
## 142      3.5
## 143      4.0
## 144      1.0
## 145      2.0
## 146      1.0
## 147      1.0
## 148      1.0
## 149      1.0
## 150      2.0
## 151      1.0
## 152      1.0
## 153      1.0
## 154      1.0
## 155      1.0
## 156      4.0
## 157      2.0
## 158      1.0
## 159      3.0
## 160      2.0
## 161      1.0
## 162      1.0
## 163      1.0
## 164      1.0
## 165      1.0
## 166      3.0
## 167      6.0
```

```
## 168      1.0
## 169      1.0
## 170      1.0
## 171      1.0
## 172      1.0
## 173      1.0
## 174      1.0
## 175      3.0
## 176      3.0
## 177      2.5
## 178      1.0
## 179      1.0
## 180      1.0
## 181      3.0
## 182      1.0
## 183      3.0
## 184      2.0
## 185      1.0
## 186      1.0
## 187      1.0
## 188      2.0
## 189      2.0
## 190      2.5
## 191      1.0
## 192      1.0
## 193      1.0
## 194      1.0
## 195      1.0
## 196      1.0
## 197      2.0
## 198      1.0
## 199      1.0
## 200      2.0
## 201      1.0
## 202      1.0
## 203      1.0
## 204      1.0
## 205      1.0
## 206      1.0
## 207      1.0
## 208      1.0
## 209      1.0
## 210      1.0
## 211      1.0
## 212      1.0
## 213      2.0
## 214      1.0
## 215      2.5
## 216      1.0
## 217      1.0
```

```
## 218      1.0
## 219      1.0
## 220      1.0
## 221      1.0
## 222      2.0
## 223      1.0
## 224      1.0
## 225      1.0
## 226      1.0
## 227      1.0
## 228      3.5
## 229      1.0
## 230      1.0
## 231      1.0
## 232      1.0
## 233      1.0
## 234      1.0
## 235      1.0
## 236      2.0
## 237      4.0
## 238      1.0
## 239      3.0
## 240      4.0
## 241      1.0
## 242      3.0
## 243      3.0
## 244      1.0
## 245      2.0
## 246      3.0
## 247      2.5
## 248      3.0
## 249      2.0
## 250      2.0
## 251      1.0
## 252      3.0
## 253      1.0
## 254      2.0
## 255      3.0
## 256      1.0
## 257      1.0
## 258      1.0
## 259      1.5
## 260      1.0
## 261      1.0
## 262      2.0
## 263      1.0
## 264      1.0
## 265      2.0
## 266      1.0
## 267      2.0
```

```
## 268      1.0
## 269      2.0
## 270      3.0
## 271      1.0
## 272      1.0
## 273      4.0
## 274      1.0
## 275      1.0
## 276      1.0
## 277      3.0
## 278      2.5
## 279      1.8
## 280      1.0
## 281      1.0
## 282      3.0
## 283      3.0
## 284      1.0
## 285      1.0
## 286      1.0
## 287      1.0
## 288      1.0
## 289      3.0
## 290      1.0
## 291      1.0
## 292      2.0
## 293      1.0
## 294      1.0
## 295      1.7
## 296      2.5
## 297      1.7
## 298      2.4
## 299      1.0
## 300      3.1
## 301      1.4
## 302      1.2
## 303      2.5
## 304      2.7
## 305      3.2
## 306      2.5
## 307      1.1
## 308      1.7
## 309      1.5
## 310      1.7
## 311      2.0
## 312      1.1
## 313      2.6
## 314      1.2
## 315      3.0
## 316      2.3
## 317      1.3
```

```
## 318      2.8
## 319      3.5
## 320      2.8
## 321      3.6
## 322      0.1
## 323      3.8
## 324      3.5
## 325     -1.6
## 326     -0.5
## 327      0.9
## 328      1.9
## 329      1.8
## 330      2.1
## 331      3.4
## 332      0.0
## 333     -0.1
## 334      1.0
## 335      0.3
## 336      0.2
## 337      2.6
## 338      4.7
## 339      3.0
## 340      2.1
## 341      2.5
## 342      2.3
## 343      2.4
## 344      1.0
## 345      1.0
## 346      1.0
## 347      1.0
## 348      1.0
## 349      2.6
## 350      2.0
## 351      1.0
## 352      1.5
## 353      0.0
## 354      2.0
## 355      1.3
## 356      1.0
## 357      2.5
## 358      1.0
## 359      1.0
## 360      1.0
## 361      1.0
## 362      1.0
## 363      1.0
## 364      1.0
## 365      1.0
## 366      2.0
## 367      3.0
```

```
## 368     1.0
## 369     3.0
## 370     3.0
## 371     1.5
## 372     3.0
## 373     1.0
## 374     2.0
## 375     1.0
## 376     1.0
## 377     2.0
## 378     2.2
## 379     3.0
## 380     1.0
## 381     1.5
## 382     1.5
## 383     3.0
## 384     1.0
## 385     1.0
## 386     1.0
## 387     1.0
## 388     2.0
## 389     1.0
## 390     2.0
## 391     1.0
## 392     1.0
## 393     1.0
## 394     1.7
## 395     3.0
## 396     1.0
## 397     1.0
## 398     1.0
## 399     2.0
## 400     1.0
## 401     1.0
## 402     1.0
## 403     1.7
## 404     3.0
## 405     1.0
## 406     2.2
## 407     1.0
## 408     0.5
## 409     1.0
## 410     1.0
## 411     3.0
## 412     2.5
## 413     2.0
## 414    -1.0
## 415     4.0
## 416     1.0
## 417     4.0
```

```
## 418    1.0
## 419    2.5
## 420    3.5
## 421    2.3
## 422    0.5
## 423    1.0
## 424    2.5
## 425    3.0
## 426    1.5
## 427    1.0
## 428    2.0
## 429    1.5
## 430    2.0
## 431    2.0
## 432    1.0
## 433    3.5
## 434    3.0
## 435    2.5
## 436    1.0
## 437    2.0
## 438    3.0
## 439    1.0
## 440    1.2
## 441    4.0
## 442    2.0
## 443    2.2
## 444    1.5
## 445    2.5
## 446    2.6
## 447    2.4
## 448    3.0
## 449    2.0
## 450    2.5
## 451    3.0
## 452    2.0
## 453    2.5
## 454    3.0
## 455    2.2
## 456    2.5
## 457    1.0
## 458    1.0
## 459    2.5
## 460    1.0
## 461    2.9
## 462    1.0
## 463    2.3
## 464    1.0
## 465    3.0
## 466    1.0
## 467    3.5
```

```
## 468     1.1
## 469     2.6
## 470     3.0
## 471     1.0
## 472     4.0
## 473     2.5
## 474     2.7
## 475     1.1
## 476     1.0
## 477     1.1
## 478     3.0
## 479     3.0
## 480     3.5
## 481     3.0
## 482     3.5
## 483     3.5
## 484     2.5
## 485     2.1
## 486     2.2
## 487     1.4
## 488     3.0
## 489     1.3
## 490     4.0
## 491     2.0
## 492     1.0
## 493     4.0
## 494     2.7
## 495     3.5
## 496     2.0
## 497     2.0
## 498     4.0
## 499     1.0
## 500     2.0
## 501     5.0
## 502     3.0
## 503     3.0
## 504     1.2
## 505     4.0
## 506     2.2
## 507     4.0
## 508     1.0
## 509     2.5
## 510     1.0
## 511     1.3
## 512     3.0
## 513     0.9
## 514     2.3
## 515     1.5
## 516     4.0
## 517     1.0
```

```
## 518      2.5
## 519      2.0
## 520      2.0
## 521      1.5
## 522      5.0
## 523      2.0
## 524      2.0
## 525      1.0
## 526      1.1
## 527      2.7
## 528      1.3
## 529      2.5
## 530      2.4
## 531      2.1
## 532      2.8
## 533      1.0
## 534      3.0
## 535      3.5
## 536      2.0
## 537      2.2
## 538      5.0
## 539      3.0
## 540      1.0
## 541      2.2
## 542      4.5
## 543      2.5
## 544      4.0
## 545      1.0
## 546      1.2
## 547      1.0
## 548      2.5
## 549      2.5
## 550      1.2
## 551      3.0
## 552      1.0
## 553      2.8
## 554      2.8
## 555      1.3
## 556      1.0
## 557      3.0
## 558      2.8
## 559      2.4
## 560      5.0
## 561      1.2
## 562      1.1
## 563      3.0
## 564      2.1
## 565      3.0
## 566      2.7
## 567      2.5
```

```
## 568     1.0
## 569     2.5
## 570     3.5
## 571     3.0
## 572     2.5
## 573     1.5
## 574     2.5
## 575     2.5
## 576     2.2
## 577     4.0
## 578     2.9
## 579     4.0
## 580     2.8
## 581     2.0
## 582     2.5
## 583     1.0
## 584     1.3
## 585     2.5
## 586     1.8
## 587     3.0
## 588     2.0
## 589     3.0
## 590     1.0
## 591     1.2
## 592     1.0
## 593     3.0
## 594     1.0
## 595     2.0
## 596     1.5
## 597     1.0
## 598     1.2
## 599     2.7
## 600     2.5
## 601     2.0
## 602     2.3
## 603     1.0
## 604     2.5
## 605     1.0
## 606     2.0
## 607     4.0
## 608     2.5
## 609     1.0
## 610     1.0
## 611     1.0
## 612     1.2
## 613     1.0
## 614     1.3
## 615     1.0
## 616     3.4
## 617     2.6
```

```
## 618    1.3
## 619    1.2
## 620    1.2
## 621    1.4
## 622    1.6
## 623    2.2
## 624    2.2
## 625    5.0
## 626    1.5
## 627    1.0
## 628    1.0
## 629    3.6
## 630    1.0
## 631    2.6
## 632    2.8
## 633    4.1
## 634    2.8
## 635    2.4
## 636    3.6
## 637    1.2
## 638    2.2
## 639    1.1
## 640    1.0
## 641    1.2
## 642    1.0
## 643    1.6
## 644    3.5
## 645    1.0
## 646    1.4
## 647    3.3
## 648    1.0
## 649    4.4
## 650    1.9
## 651    1.0
## 652    2.9
## 653    1.0
## 654    1.0
## 655    1.0
## 656    1.0
## 657    1.0
## 658    1.4
## 659    1.0
## 660    3.2
## 661    1.0
## 662    1.8
## 663    1.0
## 664    1.0
## 665    2.0
## 666    2.8
## 667    1.0
```

```
## 668    1.8
## 669    1.0
## 670    1.6
## 671    1.0
## 672    4.6
## 673    1.0
## 674    1.0
## 675    2.4
## 676    1.2
## 677    2.2
## 678    1.0
## 679    1.9
## 680    3.3
## 681    1.6
## 682    1.0
## 683    1.0
## 684    1.3
## 685    1.0
## 686    4.6
## 687    1.6
## 688    1.0
## 689    2.1
## 690    1.3
## 691    1.0
## 692    4.0
## 693    1.0
## 694    1.0
## 695    1.8
## 696    3.0
## 697    2.6
## 698    1.8
## 699    3.0
## 700    2.5
## 701    1.8
## 702    1.0
## 703    5.2
## 704    1.0
## 705    3.6
## 706    1.0
## 707    1.0
## 708    3.2
## 709    1.0
## 710    2.0
## 711    2.0
## 712    1.4
## 713    1.1
## 714    1.2
## 715    2.1
## 716    1.6
## 717    2.0
```

```
## 718       1.0
## 719       2.0
## 720       2.4
## 721       1.5
## 722       2.2
## 723       3.6
## 724       1.0
## 725       1.0
## 726       4.4
## 727       1.0
## 728       1.0
## 729       1.0
## 730       1.0
## 731       1.0
## 732       1.8
## 733       5.0
## 734       3.6
## 735       2.6
## 736       3.0
## 737       4.2
## 738       2.2
## 739       1.8
## 740       1.5
## 741       1.0
## 742       2.8
## 743       1.1
## 744       1.8
## 745       2.4
## 746       2.8
## 747       1.1
## 748       1.0
## 749       3.2
## 750       2.6
## 751       2.4
## 752       1.0
## 753       2.2
## 754       1.7
## 755       1.0
## 756       3.0
## 757       1.0
## 758       1.6
## 759       2.4
## 760       1.0
## 761       3.0
## 762       1.0
## 763       3.0
## 764       4.2
## 765       1.0
## 766       1.0
## 767       2.6
```

```
## 768    1.0
## 769    3.0
## 770    1.5
## 771    1.0
## 772    6.6
## 773    1.0
## 774    2.9
## 775    2.0
## 776    4.8
## 777    2.4
## 778    1.0
## 779    4.0
## 780    1.0
## 781    1.0
## 782    1.0
## 783    2.2
## 784    1.2
## 785    2.4
## 786    1.1
## 787    3.0
## 788    1.9
## 789    2.5
## 790    1.0
## 791    2.9
## 792    5.2
## 793    4.6
## 794    1.2
## 795    1.0
## 796    1.8
## 797    2.9
## 798    1.0
## 799    1.6
## 800    1.0
## 801    2.9
## 802    3.1
## 803    1.1
## 804    2.2
## 805    3.9
## 806    2.2
## 807    3.6
## 808    1.0
## 809    1.0
## 810    1.0
## 811    2.4
## 812    2.0
## 813    2.6
## 814    2.8
## 815    1.0
## 816    2.0
## 817    1.0
```

```
## 818     3.8
## 819     2.6
## 820     1.8
## 821     2.2
## 822     1.0
## 823     1.6
## 824     2.8
## 825     4.5
## 826     1.2
## 827     3.4
## 828     1.2
## 829     3.2
## 830     1.0
## 831     2.4
## 832     1.0
## 833     1.0
## 834     1.4
## 835     1.0
## 836     3.8
## 837     3.8
## 838     2.6
## 839     2.8
## 840     2.4
## 841     1.0
## 842     2.2
## 843     4.0
## 844     2.0
## 845     1.0
## 846     2.0
## 847     2.2
## 848     1.0
## 849     1.0
## 850     2.8
## 851     7.2
## 852     1.0
## 853     3.5
## 854     1.0
## 855     1.2
## 856     2.6
## 857     1.0
## 858     1.4
## 859     4.6
## 860     2.5
## 861     2.4
## 862     1.6
## 863     1.8
## 864     4.0
## 865     3.8
## 866     2.4
## 867     1.0
```

```
## 868     1.0
## 869     1.6
## 870     2.6
## 871     1.4
## 872     2.0
## 873     2.2
## 874     1.0
## 875     2.5
## 876     1.0
## 877     3.4
## 878     2.8
## 879     1.6
## 880     2.0
## 881     1.5
## 882     1.0
## 883     2.3
## 884     1.4
## 885     2.5
## 886     1.0
## 887     1.0
## 888     1.1
## 889     2.0
## 890     1.8
## 891     1.6
## 892     1.0
## 893     1.0
## 894     1.0
## 895     1.6
## 896     4.0
## 897     1.0
## 898     3.0
## 899     1.0
## 900     1.0
## 901     5.4
## 902     3.8
## 903     1.4
## 904     1.0
## 905     1.0
## 906     1.8
## 907     2.2
## 908     3.8
## 909     5.0
## 910     1.0
## 911     1.0
## 912     2.0
## 913     1.2
## 914     2.2
## 915     4.4
## 916     2.2
```

```
## 917     1.0
## 918     1.0
```

#CREATING A SCATTERPLOT FOR HEART FAILURE PREDICTION DATASET

```r
x=HeartFailure_Prediction$Age
y=HeartFailure_Prediction$RestingBP
plot(x,y,main = "AGE Vs RESTINGBP" ,xlab = "Age",ylab = "RestingsBP")
```