Assignment3

In this homework, you will do some data analysis using R for the Forest Fire Data described <https://archive.ics.uci.edu/ml/datasets/forest+fires> The dataset is used to find the relationship between the burned area of forest fires and meteorological data. 1. Import the data into R.

##   
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':  
##   
## filter, lag

## The following objects are masked from 'package:base':  
##   
## intersect, setdiff, setequal, union

## X Y month day FFMC DMC DC ISI temp RH wind rain area  
## 1 7 5 mar fri 86.2 26.2 94.3 5.1 8.2 51 6.7 0.0 0  
## 2 7 4 oct tue 90.6 35.4 669.1 6.7 18.0 33 0.9 0.0 0  
## 3 7 4 oct sat 90.6 43.7 686.9 6.7 14.6 33 1.3 0.0 0  
## 4 8 6 mar fri 91.7 33.3 77.5 9.0 8.3 97 4.0 0.2 0  
## 5 8 6 mar sun 89.3 51.3 102.2 9.6 11.4 99 1.8 0.0 0  
## 6 8 6 aug sun 92.3 85.3 488.0 14.7 22.2 29 5.4 0.0 0

1. How many observations are there in the dataset?

#Total no of Observations  
 dim(data)[1]

## [1] 517

#OR  
nrow(data)

## [1] 517

1. How many observations are there with a fire (i.e.,area>0)

#Observations with a fire  
dim(filter(data,area>0))[1]

## [1] 270

#OR  
nrow(subset(data,area>0))

## [1] 270

1. How many observations are there with a rain (i.e., rain>0)

#Observations with a rain  
dim(filter(data,rain>0))[1]

## [1] 8

#OR  
nrow(subset(data,rain>0))

## [1] 8

1. How many observations are there with both a fire and a rain?

#Observations with both rain and fire  
dim(filter(data,rain>0 & area>0))[1]

## [1] 2

#OR  
nrow(subset(data,rain>0 & area>0))

## [1] 2

1. Show the columns month, day, area of the all the observations.

#month, day, area of the all the observations  
data1<-select(data,month,day,area)  
head(data1)

## month day area  
## 1 mar fri 0  
## 2 oct tue 0  
## 3 oct sat 0  
## 4 mar fri 0  
## 5 mar sun 0  
## 6 aug sun 0

1. Show the columns month, day, area of the observations with a fire.

#month, day, area of the all the observations with a fire  
select(filter(data,area>0),month,day,area)

## month day area  
## 1 jul tue 0.36  
## 2 sep tue 0.43  
## 3 sep mon 0.47  
## 4 aug wed 0.55  
## 5 aug fri 0.61  
## 6 jul sat 0.71  
## 7 aug wed 0.77  
## 8 aug thu 0.90  
## 9 mar mon 0.95  
## 10 sep tue 0.96  
## 11 aug tue 1.07  
## 12 sep thu 1.12  
## 13 jun fri 1.19  
## 14 jul sun 1.36  
## 15 jul sat 1.43  
## 16 sep fri 1.46  
## 17 sep sat 1.46  
## 18 aug sun 1.56  
## 19 sep sat 1.61  
## 20 aug wed 1.63  
## 21 aug wed 1.64  
## 22 sep fri 1.69  
## 23 mar mon 1.75  
## 24 aug thu 1.90  
## 25 mar sat 1.94  
## 26 sep sat 1.95  
## 27 sep sun 2.01  
## 28 mar thu 2.14  
## 29 aug wed 2.29  
## 30 aug wed 2.51  
## 31 mar fri 2.53  
## 32 aug thu 2.55  
## 33 sep wed 2.57  
## 34 aug wed 2.69  
## 35 aug sun 2.74  
## 36 sep mon 3.07  
## 37 aug sat 3.50  
## 38 aug sat 4.53  
## 39 apr thu 4.61  
## 40 aug sun 4.69  
## 41 sep wed 4.88  
## 42 aug tue 5.23  
## 43 sep sun 5.33  
## 44 oct mon 5.44  
## 45 feb sun 6.38  
## 46 oct mon 6.83  
## 47 aug fri 6.96  
## 48 sep tue 7.04  
## 49 mar sun 7.19  
## 50 sep mon 7.30  
## 51 mar sat 7.40  
## 52 mar sun 8.24  
## 53 mar fri 8.31  
## 54 aug thu 8.68  
## 55 aug tue 8.71  
## 56 sep wed 9.41  
## 57 aug tue 10.01  
## 58 aug fri 10.02  
## 59 apr thu 10.93  
## 60 sep thu 11.06  
## 61 sep tue 11.24  
## 62 sep mon 11.32  
## 63 sep tue 11.53  
## 64 mar sun 12.10  
## 65 feb sun 13.05  
## 66 oct wed 13.70  
## 67 mar sat 13.99  
## 68 sep thu 14.57  
## 69 aug sat 15.45  
## 70 sep tue 17.20  
## 71 sep fri 19.23  
## 72 sep thu 23.41  
## 73 oct sat 24.23  
## 74 aug sat 26.00  
## 75 sep fri 26.13  
## 76 mar mon 27.35  
## 77 mar sat 28.66  
## 78 mar sat 28.66  
## 79 sep sun 29.48  
## 80 sep mon 30.32  
## 81 sep wed 31.72  
## 82 mar mon 31.86  
## 83 aug sun 32.07  
## 84 sep fri 35.88  
## 85 mar mon 36.85  
## 86 jul fri 37.02  
## 87 sep wed 37.71  
## 88 sep sun 48.55  
## 89 oct mon 49.37  
## 90 aug sat 58.30  
## 91 sep sun 64.10  
## 92 aug sat 71.30  
## 93 sep wed 88.49  
## 94 sep sun 95.18  
## 95 sep tue 103.39  
## 96 sep tue 105.66  
## 97 sep sat 154.88  
## 98 aug sun 196.48  
## 99 sep sat 200.94  
## 100 sep tue 212.88  
## 101 sep sat 1090.84  
## 102 aug sun 10.13  
## 103 aug sun 2.87  
## 104 aug sun 0.76  
## 105 aug sun 0.09  
## 106 aug wed 0.75  
## 107 aug wed 2.47  
## 108 aug wed 0.68  
## 109 aug wed 0.24  
## 110 aug wed 0.21  
## 111 aug thu 1.52  
## 112 aug thu 10.34  
## 113 aug sat 8.02  
## 114 aug sat 0.68  
## 115 aug sat 1.38  
## 116 aug mon 8.85  
## 117 aug fri 3.30  
## 118 aug fri 4.25  
## 119 aug fri 1.56  
## 120 aug fri 6.54  
## 121 aug tue 0.79  
## 122 aug tue 0.17  
## 123 aug tue 4.40  
## 124 aug tue 0.52  
## 125 aug tue 9.27  
## 126 aug tue 3.09  
## 127 dec sun 8.98  
## 128 dec wed 11.19  
## 129 dec thu 5.38  
## 130 dec mon 17.85  
## 131 dec mon 10.73  
## 132 dec mon 22.03  
## 133 dec mon 9.77  
## 134 dec fri 9.27  
## 135 dec tue 24.77  
## 136 feb wed 1.10  
## 137 feb fri 24.24  
## 138 jul sat 8.00  
## 139 jul fri 2.64  
## 140 jul tue 86.45  
## 141 jul tue 6.57  
## 142 jun sun 0.90  
## 143 jun mon 3.52  
## 144 sep sun 0.41  
## 145 sep sun 5.18  
## 146 sep sun 14.29  
## 147 sep wed 1.58  
## 148 sep thu 3.78  
## 149 sep thu 4.41  
## 150 sep thu 34.36  
## 151 sep thu 7.21  
## 152 sep thu 1.01  
## 153 sep thu 2.18  
## 154 sep thu 4.42  
## 155 sep sat 3.33  
## 156 sep sat 6.58  
## 157 sep sat 15.64  
## 158 sep sat 11.22  
## 159 sep mon 2.13  
## 160 sep mon 56.04  
## 161 sep mon 7.48  
## 162 sep mon 1.47  
## 163 sep mon 3.93  
## 164 sep mon 2.18  
## 165 sep mon 6.10  
## 166 sep mon 5.83  
## 167 sep mon 28.19  
## 168 sep fri 1.64  
## 169 sep fri 3.71  
## 170 sep fri 7.31  
## 171 sep fri 2.03  
## 172 sep fri 1.72  
## 173 sep fri 5.97  
## 174 sep fri 13.06  
## 175 sep fri 1.26  
## 176 sep fri 8.12  
## 177 sep fri 1.09  
## 178 sep fri 3.94  
## 179 sep fri 0.52  
## 180 sep tue 2.93  
## 181 sep tue 5.65  
## 182 sep tue 20.03  
## 183 sep tue 1.75  
## 184 sep sat 12.64  
## 185 sep sun 11.06  
## 186 sep fri 18.30  
## 187 sep sat 39.35  
## 188 aug sat 174.63  
## 189 jul wed 7.73  
## 190 aug thu 16.33  
## 191 aug wed 5.86  
## 192 aug thu 42.87  
## 193 aug sat 12.18  
## 194 aug sun 16.00  
## 195 sep sun 24.59  
## 196 aug fri 28.74  
## 197 feb mon 9.96  
## 198 sep fri 30.18  
## 199 sep sun 70.76  
## 200 feb sun 51.78  
## 201 sep sun 3.64  
## 202 aug sun 3.63  
## 203 jun wed 8.16  
## 204 sep thu 4.95  
## 205 sep wed 6.04  
## 206 sep sat 3.95  
## 207 sep fri 7.80  
## 208 feb fri 4.62  
## 209 jul mon 1.63  
## 210 aug thu 746.28  
## 211 jul tue 7.02  
## 212 aug sun 2.44  
## 213 aug sun 3.05  
## 214 aug wed 185.76  
## 215 jul sun 6.30  
## 216 sep sat 0.72  
## 217 aug sat 4.96  
## 218 aug mon 2.35  
## 219 aug sun 3.20  
## 220 aug sat 6.36  
## 221 aug sun 15.34  
## 222 aug mon 0.54  
## 223 aug sat 6.43  
## 224 sep fri 0.33  
## 225 aug mon 1.23  
## 226 apr mon 3.35  
## 227 sep fri 9.96  
## 228 aug wed 6.43  
## 229 aug fri 9.71  
## 230 aug wed 82.75  
## 231 aug sat 3.32  
## 232 aug sat 1.94  
## 233 sep sun 3.71  
## 234 feb tue 5.39  
## 235 feb tue 2.14  
## 236 feb sat 6.84  
## 237 mar mon 3.18  
## 238 mar wed 5.55  
## 239 mar thu 6.61  
## 240 apr sun 61.13  
## 241 may fri 38.48  
## 242 jun mon 1.94  
## 243 jun sat 70.32  
## 244 jun thu 10.08  
## 245 jun thu 3.19  
## 246 jul thu 1.76  
## 247 jul sun 7.36  
## 248 jul sun 2.21  
## 249 jul mon 278.53  
## 250 jul thu 2.75  
## 251 aug sun 1.29  
## 252 aug sun 26.43  
## 253 aug mon 2.07  
## 254 aug tue 2.00  
## 255 aug tue 16.40  
## 256 aug tue 46.70  
## 257 aug fri 43.32  
## 258 aug sat 8.59  
## 259 aug mon 2.77  
## 260 aug tue 14.68  
## 261 aug tue 40.54  
## 262 aug tue 10.82  
## 263 aug wed 1.95  
## 264 aug wed 49.59  
## 265 aug thu 5.80  
## 266 aug fri 2.17  
## 267 aug fri 0.43  
## 268 aug sun 6.44  
## 269 aug sun 54.29  
## 270 aug sun 11.16

#OR  
subset(data,area>0,c("month","day","area"))

## month day area  
## 139 jul tue 0.36  
## 140 sep tue 0.43  
## 141 sep mon 0.47  
## 142 aug wed 0.55  
## 143 aug fri 0.61  
## 144 jul sat 0.71  
## 145 aug wed 0.77  
## 146 aug thu 0.90  
## 147 mar mon 0.95  
## 148 sep tue 0.96  
## 149 aug tue 1.07  
## 150 sep thu 1.12  
## 151 jun fri 1.19  
## 152 jul sun 1.36  
## 153 jul sat 1.43  
## 154 sep fri 1.46  
## 155 sep sat 1.46  
## 156 aug sun 1.56  
## 157 sep sat 1.61  
## 158 aug wed 1.63  
## 159 aug wed 1.64  
## 160 sep fri 1.69  
## 161 mar mon 1.75  
## 162 aug thu 1.90  
## 163 mar sat 1.94  
## 164 sep sat 1.95  
## 165 sep sun 2.01  
## 166 mar thu 2.14  
## 167 aug wed 2.29  
## 168 aug wed 2.51  
## 169 mar fri 2.53  
## 170 aug thu 2.55  
## 171 sep wed 2.57  
## 172 aug wed 2.69  
## 173 aug sun 2.74  
## 174 sep mon 3.07  
## 175 aug sat 3.50  
## 176 aug sat 4.53  
## 177 apr thu 4.61  
## 178 aug sun 4.69  
## 179 sep wed 4.88  
## 180 aug tue 5.23  
## 181 sep sun 5.33  
## 182 oct mon 5.44  
## 183 feb sun 6.38  
## 184 oct mon 6.83  
## 185 aug fri 6.96  
## 186 sep tue 7.04  
## 187 mar sun 7.19  
## 188 sep mon 7.30  
## 189 mar sat 7.40  
## 190 mar sun 8.24  
## 191 mar fri 8.31  
## 192 aug thu 8.68  
## 193 aug tue 8.71  
## 194 sep wed 9.41  
## 195 aug tue 10.01  
## 196 aug fri 10.02  
## 197 apr thu 10.93  
## 198 sep thu 11.06  
## 199 sep tue 11.24  
## 200 sep mon 11.32  
## 201 sep tue 11.53  
## 202 mar sun 12.10  
## 203 feb sun 13.05  
## 204 oct wed 13.70  
## 205 mar sat 13.99  
## 206 sep thu 14.57  
## 207 aug sat 15.45  
## 208 sep tue 17.20  
## 209 sep fri 19.23  
## 210 sep thu 23.41  
## 211 oct sat 24.23  
## 212 aug sat 26.00  
## 213 sep fri 26.13  
## 214 mar mon 27.35  
## 215 mar sat 28.66  
## 216 mar sat 28.66  
## 217 sep sun 29.48  
## 218 sep mon 30.32  
## 219 sep wed 31.72  
## 220 mar mon 31.86  
## 221 aug sun 32.07  
## 222 sep fri 35.88  
## 223 mar mon 36.85  
## 224 jul fri 37.02  
## 225 sep wed 37.71  
## 226 sep sun 48.55  
## 227 oct mon 49.37  
## 228 aug sat 58.30  
## 229 sep sun 64.10  
## 230 aug sat 71.30  
## 231 sep wed 88.49  
## 232 sep sun 95.18  
## 233 sep tue 103.39  
## 234 sep tue 105.66  
## 235 sep sat 154.88  
## 236 aug sun 196.48  
## 237 sep sat 200.94  
## 238 sep tue 212.88  
## 239 sep sat 1090.84  
## 243 aug sun 10.13  
## 245 aug sun 2.87  
## 246 aug sun 0.76  
## 247 aug sun 0.09  
## 248 aug wed 0.75  
## 250 aug wed 2.47  
## 251 aug wed 0.68  
## 252 aug wed 0.24  
## 253 aug wed 0.21  
## 254 aug thu 1.52  
## 255 aug thu 10.34  
## 257 aug sat 8.02  
## 258 aug sat 0.68  
## 260 aug sat 1.38  
## 261 aug mon 8.85  
## 262 aug fri 3.30  
## 263 aug fri 4.25  
## 264 aug fri 1.56  
## 265 aug fri 6.54  
## 266 aug tue 0.79  
## 267 aug tue 0.17  
## 270 aug tue 4.40  
## 271 aug tue 0.52  
## 272 aug tue 9.27  
## 273 aug tue 3.09  
## 274 dec sun 8.98  
## 275 dec wed 11.19  
## 276 dec thu 5.38  
## 277 dec mon 17.85  
## 278 dec mon 10.73  
## 279 dec mon 22.03  
## 280 dec mon 9.77  
## 281 dec fri 9.27  
## 282 dec tue 24.77  
## 284 feb wed 1.10  
## 285 feb fri 24.24  
## 292 jul sat 8.00  
## 293 jul fri 2.64  
## 294 jul tue 86.45  
## 295 jul tue 6.57  
## 297 jun sun 0.90  
## 302 jun mon 3.52  
## 307 sep sun 0.41  
## 308 sep sun 5.18  
## 312 sep sun 14.29  
## 315 sep wed 1.58  
## 318 sep thu 3.78  
## 320 sep thu 4.41  
## 321 sep thu 34.36  
## 322 sep thu 7.21  
## 323 sep thu 1.01  
## 324 sep thu 2.18  
## 325 sep thu 4.42  
## 330 sep sat 3.33  
## 331 sep sat 6.58  
## 332 sep sat 15.64  
## 333 sep sat 11.22  
## 334 sep mon 2.13  
## 338 sep mon 56.04  
## 339 sep mon 7.48  
## 340 sep mon 1.47  
## 341 sep mon 3.93  
## 344 sep mon 2.18  
## 345 sep mon 6.10  
## 346 sep mon 5.83  
## 347 sep mon 28.19  
## 350 sep fri 1.64  
## 351 sep fri 3.71  
## 352 sep fri 7.31  
## 353 sep fri 2.03  
## 354 sep fri 1.72  
## 355 sep fri 5.97  
## 356 sep fri 13.06  
## 357 sep fri 1.26  
## 360 sep fri 8.12  
## 361 sep fri 1.09  
## 362 sep fri 3.94  
## 363 sep fri 0.52  
## 364 sep tue 2.93  
## 365 sep tue 5.65  
## 366 sep tue 20.03  
## 367 sep tue 1.75  
## 369 sep sat 12.64  
## 371 sep sun 11.06  
## 375 sep fri 18.30  
## 376 sep sat 39.35  
## 378 aug sat 174.63  
## 381 jul wed 7.73  
## 382 aug thu 16.33  
## 383 aug wed 5.86  
## 384 aug thu 42.87  
## 385 aug sat 12.18  
## 386 aug sun 16.00  
## 387 sep sun 24.59  
## 389 aug fri 28.74  
## 391 feb mon 9.96  
## 392 sep fri 30.18  
## 393 sep sun 70.76  
## 396 feb sun 51.78  
## 397 sep sun 3.64  
## 398 aug sun 3.63  
## 401 jun wed 8.16  
## 402 sep thu 4.95  
## 405 sep wed 6.04  
## 407 sep sat 3.95  
## 409 sep fri 7.80  
## 412 feb fri 4.62  
## 413 jul mon 1.63  
## 416 aug thu 746.28  
## 417 jul tue 7.02  
## 419 aug sun 2.44  
## 420 aug sun 3.05  
## 421 aug wed 185.76  
## 423 jul sun 6.30  
## 424 sep sat 0.72  
## 425 aug sat 4.96  
## 428 aug mon 2.35  
## 430 aug sun 3.20  
## 432 aug sat 6.36  
## 434 aug sun 15.34  
## 437 aug mon 0.54  
## 439 aug sat 6.43  
## 440 sep fri 0.33  
## 442 aug mon 1.23  
## 443 apr mon 3.35  
## 445 sep fri 9.96  
## 451 aug wed 6.43  
## 452 aug fri 9.71  
## 458 aug wed 82.75  
## 459 aug sat 3.32  
## 460 aug sat 1.94  
## 463 sep sun 3.71  
## 464 feb tue 5.39  
## 465 feb tue 2.14  
## 466 feb sat 6.84  
## 467 mar mon 3.18  
## 468 mar wed 5.55  
## 469 mar thu 6.61  
## 470 apr sun 61.13  
## 472 may fri 38.48  
## 473 jun mon 1.94  
## 474 jun sat 70.32  
## 475 jun thu 10.08  
## 476 jun thu 3.19  
## 477 jul thu 1.76  
## 478 jul sun 7.36  
## 479 jul sun 2.21  
## 480 jul mon 278.53  
## 481 jul thu 2.75  
## 483 aug sun 1.29  
## 485 aug sun 26.43  
## 486 aug mon 2.07  
## 487 aug tue 2.00  
## 488 aug tue 16.40  
## 489 aug tue 46.70  
## 494 aug fri 43.32  
## 495 aug sat 8.59  
## 497 aug mon 2.77  
## 498 aug tue 14.68  
## 499 aug tue 40.54  
## 500 aug tue 10.82  
## 504 aug wed 1.95  
## 505 aug wed 49.59  
## 506 aug thu 5.80  
## 510 aug fri 2.17  
## 511 aug fri 0.43  
## 513 aug sun 6.44  
## 514 aug sun 54.29  
## 515 aug sun 11.16

1. How large are the five largest fires (i.e., having largest area)

#five largest fires  
top\_n(data,5,area)

## X Y month day FFMC DMC DC ISI temp RH wind rain area  
## 1 2 2 sep sat 92.5 121.1 674.4 8.6 18.2 46 1.8 0 200.94  
## 2 1 2 sep tue 91.0 129.5 692.6 7.0 18.8 40 2.2 0 212.88  
## 3 6 5 sep sat 92.5 121.1 674.4 8.6 25.1 27 4.0 0 1090.84  
## 4 8 6 aug thu 94.8 222.4 698.6 13.9 27.5 27 4.9 0 746.28  
## 5 7 4 jul mon 89.2 103.9 431.6 6.4 22.6 57 4.9 0 278.53

#OR  
head(data[order(-data$area),],n=5)

## X Y month day FFMC DMC DC ISI temp RH wind rain area  
## 239 6 5 sep sat 92.5 121.1 674.4 8.6 25.1 27 4.0 0 1090.84  
## 416 8 6 aug thu 94.8 222.4 698.6 13.9 27.5 27 4.9 0 746.28  
## 480 7 4 jul mon 89.2 103.9 431.6 6.4 22.6 57 4.9 0 278.53  
## 238 1 2 sep tue 91.0 129.5 692.6 7.0 18.8 40 2.2 0 212.88  
## 237 2 2 sep sat 92.5 121.1 674.4 8.6 18.2 46 1.8 0 200.94

1. What are the corresponding month, temp, RH, wind, rain area?

#corresponding month, temp, RH,wind, rain area  
head(data[order(-data$area),c("month","temp","RH","wind","rain","area")],n=5)

## month temp RH wind rain area  
## 239 sep 25.1 27 4.0 0 1090.84  
## 416 aug 27.5 27 4.9 0 746.28  
## 480 jul 22.6 57 4.9 0 278.53  
## 238 sep 18.8 40 2.2 0 212.88  
## 237 sep 18.2 46 1.8 0 200.94

#OR  
top\_n(data,5,area)[,c("month","temp","RH","wind","rain","area")]

## month temp RH wind rain area  
## 1 sep 18.2 46 1.8 0 200.94  
## 2 sep 18.8 40 2.2 0 212.88  
## 3 sep 25.1 27 4.0 0 1090.84  
## 4 aug 27.5 27 4.9 0 746.28  
## 5 jul 22.6 57 4.9 0 278.53

#OR  
select(top\_n(data,5,area),c("month","temp","RH","wind","rain","area"))

## month temp RH wind rain area  
## 1 sep 18.2 46 1.8 0 200.94  
## 2 sep 18.8 40 2.2 0 212.88  
## 3 sep 25.1 27 4.0 0 1090.84  
## 4 aug 27.5 27 4.9 0 746.28  
## 5 jul 22.6 57 4.9 0 278.53

1. Add one column to the data indicating whether a fire occurred for each observation (True for area >0 and False for area ==0)

#Add new column indicating whether a fire occurred  
data$Fire\_ocurred<-data$area>0  
tail(data)

## X Y month day FFMC DMC DC ISI temp RH wind rain area  
## 512 8 6 aug sun 81.6 56.7 665.6 1.9 27.8 35 2.7 0 0.00  
## 513 4 3 aug sun 81.6 56.7 665.6 1.9 27.8 32 2.7 0 6.44  
## 514 2 4 aug sun 81.6 56.7 665.6 1.9 21.9 71 5.8 0 54.29  
## 515 7 4 aug sun 81.6 56.7 665.6 1.9 21.2 70 6.7 0 11.16  
## 516 1 4 aug sat 94.4 146.0 614.7 11.3 25.6 42 4.0 0 0.00  
## 517 6 3 nov tue 79.5 3.0 106.7 1.1 11.8 31 4.5 0 0.00  
## Fire\_ocurred  
## 512 FALSE  
## 513 TRUE  
## 514 TRUE  
## 515 TRUE  
## 516 FALSE  
## 517 FALSE

1. Construct a matrix with 10 columns and 10 rows, filled with random numbers between 0 and 1. Apply two different methods.

mat1<-matrix(rnorm(100,0.5,0.1),10,10)  
mat1

## [,1] [,2] [,3] [,4] [,5] [,6]  
## [1,] 0.5420616 0.5468110 0.5280847 0.6147943 0.4425990 0.5537712  
## [2,] 0.4462582 0.4821743 0.4006221 0.3406029 0.6565066 0.6247335  
## [3,] 0.5895982 0.4892934 0.3601287 0.5149795 0.3859585 0.3706663  
## [4,] 0.2929000 0.2919580 0.5729856 0.5276019 0.6319042 0.5966341  
## [5,] 0.4311796 0.5487037 0.3538308 0.6161742 0.4595090 0.3216764  
## [6,] 0.5298394 0.5486662 0.5268808 0.3187663 0.4392848 0.5220791  
## [7,] 0.6258284 0.5071398 0.4260532 0.3834597 0.4170413 0.3237648  
## [8,] 0.3934024 0.5227855 0.4983159 0.5922119 0.6600893 0.5144886  
## [9,] 0.4642635 0.4566468 0.5337203 0.2932319 0.3016953 0.5715785  
## [10,] 0.6418368 0.5391815 0.5819930 0.4833381 0.5817481 0.4425019  
## [,7] [,8] [,9] [,10]  
## [1,] 0.5118172 0.4034477 0.3807989 0.6042097  
## [2,] 0.5721704 0.5954108 0.5697582 0.4652062  
## [3,] 0.6092517 0.5837301 0.5321125 0.3749948  
## [4,] 0.4370897 0.4764419 0.4900958 0.5244569  
## [5,] 0.3411071 0.4050382 0.3567819 0.5210516  
## [6,] 0.4494707 0.4722933 0.4051955 0.5398642  
## [7,] 0.3652424 0.4246828 0.6032448 0.5484525  
## [8,] 0.4007575 0.4663341 0.5764319 0.4976711  
## [9,] 0.5729762 0.4681441 0.6249752 0.5438517  
## [10,] 0.7184577 0.3643822 0.4669373 0.3743815

1. Calculate the row means of this matrix.

#Row means  
rowMeans(mat1[1:10,])

## [1] 0.5128395 0.5153443 0.4810714 0.4842068 0.4355053 0.4752340 0.4624910  
## [8] 0.5122488 0.4831084 0.5194758

1. Remake the above matrix, with 100 columns, and 10 rows. Then calculate the column means.

mat2<-matrix(rnorm(1000,0.5,0.1),10,100)  
  
colMeans(mat2[,1:100])

## [1] 0.5030027 0.4716286 0.5070103 0.5564919 0.4915861 0.5034831 0.5106426  
## [8] 0.4803828 0.4832463 0.5148572 0.4729297 0.5502245 0.5277467 0.5193170  
## [15] 0.5241813 0.4995875 0.5058243 0.4948952 0.4502108 0.4761257 0.5241161  
## [22] 0.5049397 0.4024572 0.4704879 0.4857377 0.5000193 0.4805510 0.5334277  
## [29] 0.5168019 0.5156703 0.5396092 0.5019712 0.5317021 0.5145448 0.5470070  
## [36] 0.4843751 0.4825306 0.4867506 0.5370830 0.4638724 0.4717721 0.5327972  
## [43] 0.5163523 0.5044944 0.4718656 0.4933977 0.5526343 0.5342082 0.4652538  
## [50] 0.4648663 0.4520330 0.4739237 0.5503683 0.4825550 0.4778091 0.5652144  
## [57] 0.5055752 0.5154152 0.5900380 0.4370345 0.5072302 0.4549425 0.4936436  
## [64] 0.4802126 0.5036557 0.4576673 0.4907843 0.4823484 0.5045059 0.4744126  
## [71] 0.5000248 0.4884084 0.4889003 0.5367370 0.4444668 0.4585754 0.4818523  
## [78] 0.5013813 0.5005472 0.5254525 0.4284084 0.4898065 0.5318917 0.4901742  
## [85] 0.4670952 0.4644494 0.5208656 0.5181890 0.4865669 0.4571125 0.4764830  
## [92] 0.5016307 0.5064516 0.4956322 0.4885641 0.5630709 0.4915407 0.4813082  
## [99] 0.5038326 0.5116497