M.S.SANJAY

15BCE0517

EXPERIMENT 1:

**DATA:**

> weather <- read.csv(file="C:/Users/Lenovo/Desktop/weather.csv",head=TRUE,sep=",")

> weather

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365 GHCND:USC00327027 PETERSBURG 2 N ND US 466.3 48.0355 -98.01

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2 20100102 -35 144 4

3 20100103 -36 143 5

4 20100104 -38 142 7

5 20100105 -39 141 9

6 20100106 -41 140 10

7 20100107 -42 140 12

8 20100108 -43 139 13

9 20100109 -44 139 15

10 20100110 -45 139 17

11 20100111 -45 138 19

12 20100112 -46 139 21

13 20100113 -47 139 23

14 20100114 -47 139 25

15 20100115 -47 140 27

16 20100116 -47 140 30

17 20100117 -48 141 32

18 20100118 -48 142 34

19 20100119 -47 143 35

20 20100120 -47 144 37

21 20100121 -47 145 39

22 20100122 -46 146 41

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26 20100126 -43 152 47

27 20100127 -42 154 49

28 20100128 -41 156 50

29 20100129 -40 158 52

30 20100130 -38 160 54

31 20100131 -37 162 55

32 20100201 -35 164 1

33 20100202 -33 166 3

34 20100203 -31 169 4

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37 20100206 -25 176 8

38 20100207 -22 178 10

39 20100208 -20 181 11

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41 20100210 -14 186 13

42 20100211 -11 188 15

43 20100212 -8 191 16

44 20100213 -5 194 18

45 20100214 -1 196 19

46 20100215 2 199 21

47 20100216 6 202 22

48 20100217 9 205 24

49 20100218 13 207 25

50 20100219 17 210 27

51 20100220 21 213 29

52 20100221 25 216 31

53 20100222 29 219 32

54 20100223 33 223 34

55 20100224 38 226 36

56 20100225 42 229 38

57 20100226 47 232 40

58 20100227 52 236 42

59 20100228 56 239 44

60 20100301 61 243 2

61 20100302 66 247 4

62 20100303 71 251 7

63 20100304 76 254 9

64 20100305 81 259 11

65 20100306 86 263 13

66 20100307 91 267 15

67 20100308 97 272 18

68 20100309 102 276 20

69 20100310 107 281 22

70 20100311 112 286 24

71 20100312 118 291 26

72 20100313 123 296 28

73 20100314 129 301 30

74 20100315 134 307 32

75 20100316 140 313 35

76 20100317 145 318 37

77 20100318 151 324 39

78 20100319 156 330 42

79 20100320 161 336 45

80 20100321 167 343 47

81 20100322 172 349 50

82 20100323 178 356 52

83 20100324 183 363 55

84 20100325 189 369 57

85 20100326 194 376 60

86 20100327 199 383 62

87 20100328 205 390 64

88 20100329 210 397 67

89 20100330 215 405 69

90 20100331 221 412 72

91 20100401 226 419 2

92 20100402 231 426 5

93 20100403 236 434 7

94 20100404 241 441 10

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96 20100406 251 456 15

97 20100407 256 463 18

98 20100408 261 470 20

99 20100409 266 477 23

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101 20100411 275 491 28

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103 20100413 284 505 33

104 20100414 289 512 36

105 20100415 294 518 38

106 20100416 298 525 41

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109 20100419 311 543 50

110 20100420 315 549 53

111 20100421 320 555 56

112 20100422 324 560 60

113 20100423 328 566 64

114 20100424 332 571 68

115 20100425 336 576 73

116 20100426 340 581 77

117 20100427 344 586 82

118 20100428 348 591 88

119 20100429 352 596 93

120 20100430 356 600 98

121 20100501 360 604 6

122 20100502 364 609 12

123 20100503 368 613 18

124 20100504 371 617 24

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126 20100506 379 624 37

127 20100507 383 628 44

128 20100508 387 631 51

129 20100509 391 635 58

130 20100510 394 638 66

131 20100511 398 642 74

132 20100512 402 645 82

133 20100513 406 648 90

134 20100514 409 651 98

135 20100515 413 654 105

136 20100516 417 657 113

137 20100517 421 660 122

138 20100518 425 663 131

139 20100519 428 666 139

140 20100520 432 669 148

141 20100521 436 672 156

142 20100522 440 675 165

143 20100523 444 678 173

144 20100524 447 681 182

145 20100525 451 684 191

146 20100526 455 687 200

147 20100527 459 690 209

148 20100528 462 693 218

149 20100529 466 696 228

150 20100530 470 699 238

151 20100531 473 702 249

152 20100601 477 705 11

153 20100602 481 708 22

154 20100603 484 711 33

155 20100604 488 714 45

156 20100605 491 717 56

157 20100606 495 719 67

158 20100607 498 722 79

159 20100608 501 725 90

160 20100609 505 728 102

161 20100610 508 731 114

162 20100611 511 733 126

163 20100612 514 736 138

164 20100613 517 739 151

165 20100614 520 741 165

166 20100615 523 744 177

167 20100616 525 746 190

168 20100617 528 749 204

169 20100618 531 751 217

170 20100619 533 753 231

171 20100620 536 756 244

172 20100621 538 758 258

173 20100622 540 760 271

174 20100623 542 762 284

175 20100624 544 764 298

176 20100625 546 766 311

177 20100626 548 768 324

178 20100627 549 769 338

179 20100628 551 771 351

180 20100629 553 773 363

181 20100630 554 774 376

182 20100701 555 776 12

183 20100702 557 778 24

184 20100703 558 779 37

185 20100704 559 780 49

186 20100705 560 782 61

187 20100706 561 783 73

188 20100707 562 784 85

189 20100708 562 786 97

190 20100709 563 787 109

191 20100710 564 788 121

192 20100711 564 789 131

193 20100712 565 790 142

194 20100713 565 791 153

195 20100714 566 792 163

196 20100715 566 793 174

197 20100716 566 794 184

198 20100717 566 795 194

199 20100718 567 796 203

200 20100719 567 797 213

201 20100720 567 798 223

202 20100721 567 799 233

203 20100722 567 800 243

204 20100723 567 800 252

205 20100724 567 801 261

206 20100725 566 802 270

207 20100726 566 802 279

208 20100727 566 803 287

209 20100728 566 803 296

210 20100729 565 804 304

211 20100730 565 804 313

212 20100731 564 805 322

213 20100801 564 805 9

214 20100802 563 805 18

215 20100803 563 805 27

216 20100804 562 805 36

217 20100805 561 805 45

218 20100806 560 804 53

219 20100807 559 804 62

220 20100808 558 804 70

221 20100809 557 803 79

222 20100810 556 802 88

223 20100811 555 801 98

224 20100812 553 800 107

225 20100813 552 799 116

226 20100814 550 798 125

227 20100815 548 796 134

228 20100816 546 795 143

229 20100817 544 793 152

230 20100818 542 791 161

231 20100819 540 789 170

232 20100820 538 787 179

233 20100821 535 784 188

234 20100822 533 782 197

235 20100823 530 779 206

236 20100824 527 777 216

237 20100825 524 774 225

238 20100826 521 770 234

239 20100827 518 767 242

240 20100828 515 764 250

241 20100829 511 760 259

242 20100830 508 757 267

243 20100831 504 753 275

244 20100901 501 749 8

245 20100902 497 745 16

246 20100903 493 741 23

247 20100904 489 737 31

248 20100905 485 733 39

249 20100906 481 729 46

250 20100907 476 725 54

251 20100908 472 720 61

252 20100909 468 716 68

253 20100910 463 711 75

254 20100911 459 707 82

255 20100912 454 702 89

256 20100913 450 697 96

257 20100914 445 693 103

258 20100915 441 688 109

259 20100916 436 684 116

260 20100917 431 679 122

261 20100918 427 674 129

262 20100919 422 669 135

263 20100920 418 665 142

264 20100921 413 660 148

265 20100922 409 655 154

266 20100923 404 650 161

267 20100924 400 646 168

268 20100925 395 641 174

269 20100926 391 636 181

270 20100927 387 631 188

271 20100928 382 627 195

272 20100929 378 622 202

273 20100930 374 617 208

274 20101001 370 612 7

275 20101002 366 607 13

276 20101003 361 602 20

277 20101004 357 597 27

278 20101005 353 592 33

279 20101006 349 587 40

280 20101007 346 582 46

281 20101008 342 577 53

282 20101009 338 572 58

283 20101010 334 567 64

284 20101011 330 562 70

285 20101012 326 556 76

286 20101013 322 551 82

287 20101014 318 545 88

288 20101015 315 540 94

289 20101016 311 534 100

290 20101017 307 528 106

291 20101018 303 522 112

292 20101019 299 516 117

293 20101020 295 511 123

294 20101021 291 504 128

295 20101022 287 498 133

296 20101023 283 492 137

297 20101024 279 486 141

298 20101025 274 479 145

299 20101026 270 473 149

300 20101027 266 466 154

301 20101028 261 460 158

302 20101029 257 453 161

303 20101030 252 447 165

304 20101031 248 440 169

305 20101101 243 433 3

306 20101102 238 426 6

307 20101103 233 419 9

308 20101104 228 413 12

309 20101105 223 406 15

310 20101106 218 399 18

311 20101107 213 392 21

312 20101108 207 385 24

313 20101109 202 378 27

314 20101110 197 371 30

315 20101111 191 365 32

316 20101112 186 358 35

317 20101113 180 351 38

318 20101114 175 344 41

319 20101115 169 338 43

320 20101116 163 331 46

321 20101117 157 325 49

322 20101118 152 318 51

323 20101119 146 312 54

324 20101120 140 306 57

325 20101121 134 300 60

326 20101122 129 294 62

327 20101123 123 288 65

328 20101124 117 282 67

329 20101125 112 276 70

330 20101126 106 271 72

331 20101127 100 265 74

332 20101128 95 260 77

333 20101129 89 254 79

334 20101130 84 249 81

335 20101201 78 244 3

336 20101202 73 239 5

337 20101203 68 234 8

338 20101204 63 230 11

339 20101205 58 225 13

340 20101206 53 221 16

341 20101207 48 216 19

342 20101208 44 212 22

343 20101209 39 208 24

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345 20101211 30 200 30

346 20101212 26 196 32

347 20101213 22 193 35

348 20101214 18 189 37

349 20101215 14 186 39

350 20101216 10 182 41

351 20101217 7 179 44

352 20101218 3 176 46

353 20101219 0 173 48

354 20101220 -4 170 50

355 20101221 -7 168 52

356 20101222 -10 165 53

357 20101223 -13 162 55

358 20101224 -15 160 58

359 20101225 -18 158 60

360 20101226 -21 156 62

361 20101227 -23 154 64

362 20101228 -25 152 67

363 20101229 -27 150 69

364 20101230 -29 148 71

365 20101231 -31 147 73

> max=weather$MAX

> max

[1] 145 144 143 142 141 140 140 139 139 139 138 139 139 139 140 140 141 142

[19] 143 144 145 146 148 149 151 152 154 156 158 160 162 164 166 169 171 173

[37] 176 178 181 183 186 188 191 194 196 199 202 205 207 210 213 216 219 223

[55] 226 229 232 236 239 243 247 251 254 259 263 267 272 276 281 286 291 296

[73] 301 307 313 318 324 330 336 343 349 356 363 369 376 383 390 397 405 412

[91] 419 426 434 441 448 456 463 470 477 484 491 498 505 512 518 525 531 537

[109] 543 549 555 560 566 571 576 581 586 591 596 600 604 609 613 617 620 624

[127] 628 631 635 638 642 645 648 651 654 657 660 663 666 669 672 675 678 681

[145] 684 687 690 693 696 699 702 705 708 711 714 717 719 722 725 728 731 733

[163] 736 739 741 744 746 749 751 753 756 758 760 762 764 766 768 769 771 773

[181] 774 776 778 779 780 782 783 784 786 787 788 789 790 791 792 793 794 795

[199] 796 797 798 799 800 800 801 802 802 803 803 804 804 805 805 805 805 805

[217] 805 804 804 804 803 802 801 800 799 798 796 795 793 791 789 787 784 782

[235] 779 777 774 770 767 764 760 757 753 749 745 741 737 733 729 725 720 716

[253] 711 707 702 697 693 688 684 679 674 669 665 660 655 650 646 641 636 631

[271] 627 622 617 612 607 602 597 592 587 582 577 572 567 562 556 551 545 540

[289] 534 528 522 516 511 504 498 492 486 479 473 466 460 453 447 440 433 426

[307] 419 413 406 399 392 385 378 371 365 358 351 344 338 331 325 318 312 306

[325] 300 294 288 282 276 271 265 260 254 249 244 239 234 230 225 221 216 212

[343] 208 204 200 196 193 189 186 182 179 176 173 170 168 165 162 160 158 156

[361] 154 152 150 148 147

**FUNCTIONS:**

> min=weather$MIN

> rain=weather$RAIN

> mean(max)

[1] 493.1863

> mean(min)

[1] 282.0356

> mean(rain)

[1] 87.59178

> median(max)

[1] 531

> median(min)

[1] 307

> median(rain)

[1] 56

> var(max)

[1] 56612.27

> var(min)

[1] 45797.52

> var(rain)

[1] 6718.11

> sd(max)

[1] 237.9333

> sd(min)

[1] 214.0036

> sd(rain)

[1] 81.96408

> cor(max,min,method='pearson')

[1] 0.9976028

> summary(weather)

STATION STATION\_NAME ELEVATION

GHCND:USC00327027:365 PETERSBURG 2 N ND US:365 Min. :466.3

1st Qu.:466.3

Median :466.3

Mean :466.3

3rd Qu.:466.3

Max. :466.3

LATITUDE LONGITUDE DATE MIN

Min. :48.04 Min. :-98.01 Min. :20100101 Min. :-48

1st Qu.:48.04 1st Qu.:-98.01 1st Qu.:20100402 1st Qu.: 73

Median :48.04 Median :-98.01 Median :20100702 Median :307

Mean :48.04 Mean :-98.01 Mean :20100668 Mean :282

3rd Qu.:48.04 3rd Qu.:-98.01 3rd Qu.:20101001 3rd Qu.:489

Max. :48.04 Max. :-98.01 Max. :20101231 Max. :567

MAX RAIN

Min. :138.0 Min. : 1.00

1st Qu.:247.0 1st Qu.: 27.00

Median :531.0 Median : 56.00

Mean :493.2 Mean : 87.59

3rd Qu.:725.0 3rd Qu.:131.00

Max. :805.0 Max. :376.00

> cor(max,min,method='kendall')

[1] 0.9615269

> cor(max,min,method='spearman')

[1] 0.9959973

> 100\*sd(max)/mean(max)

[1] 48.24411

> 100\*sd(min)/mean(min)

[1] 75.8782

> 100\*sd(rain)/mean(rain)

[1] 93.57508

> IQR(max)

[1] 478

> IQR(min)

[1] 416

> IQR(rain)

[1] 104

> max(max,na.rm=FALSE)

[1] 805

> max(min,na.rm=FALSE)

[1] 567

> max(rain,na.rm=FALSE)

[1] 376

> min(max,na.rm=FALSE)

[1] 138

> min(min,na.rm=FALSE)

[1] -48

> min(rain,na.rm=FALSE)

[1] 1

> range(max)

[1] 138 805

> range(min)

[1] -48 567

> range(rain)

[1] 1 376

> modefunc <- function(v) {

+ uniqv <- unique(v)

+ uniqv[which.max(tabulate(match(v, uniqv)))]

+ }

>

> modefunc(max)

[1] 139

> modefunc(min)

[1] 566

> modefunc(rain)

[1] 12

> sum(max)

[1] 180013

> sum(min)

[1] 102943

> sum(rain)

[1] 31971

> quantile(max)

0% 25% 50% 75% 100%

138 247 531 725 805

> quantile(min)

0% 25% 50% 75% 100%

-48 73 307 489 567

> quantile(rain)

0% 25% 50% 75% 100%

1 27 56 131 376

EXPERIMENT 2

**DATA**

> grade <- read.csv(file="C:/Users/Lenovo/Desktop/class-grades.csv",head=TRUE,sep=",")

> grade

Prefix Assignment Tutorial Midterm TakeHome Final

1 5 57.14 34.09 64.38 51.48 52.50

2 8 95.05 105.49 67.50 99.07 68.33

3 8 83.70 83.17 30.00 63.15 48.89

4 7 81.22 96.06 49.38 105.93 NA

5 8 91.32 93.64 95.00 107.41 73.89

6 7 95.00 92.58 93.12 97.78 68.06

7 8 95.05 102.99 56.25 99.07 50.00

8 7 72.85 86.85 60.00 NA 56.11

9 8 84.26 93.10 47.50 18.52 50.83

10 7 90.10 97.55 51.25 88.89 63.61

11 7 80.44 90.20 75.00 91.48 39.72

12 6 86.26 80.60 74.38 87.59 77.50

13 8 NA 103.71 72.50 93.52 63.33

14 7 91.28 83.53 81.25 99.81 92.22

15 8 84.80 89.08 NA 16.91 35.83

16 7 93.83 95.43 88.12 80.93 90.00

17 8 84.80 89.08 47.50 16.91 53.33

18 4 92.01 NA 38.75 86.11 49.17

19 8 55.14 81.85 75.00 56.11 62.50

20 8 93.04 82.93 79.38 83.33 91.11

21 8 63.40 86.21 63.12 72.78 NA

22 8 75.27 97.52 63.12 61.11 66.11

23 8 63.78 76.21 39.38 42.22 34.44

24 7 80.44 90.20 46.25 91.48 72.22

25 7 53.36 82.01 74.38 102.59 56.39

26 6 91.28 95.24 82.50 97.59 92.78

27 8 82.45 86.65 93.12 85.56 89.17

28 8 75.27 86.67 69.38 61.11 88.89

29 8 91.32 94.89 76.25 107.41 85.56

30 7 91.62 NA 71.88 90.00 45.56

31 7 98.58 102.46 67.50 97.59 63.33

32 7 86.26 88.57 70.00 87.59 55.00

33 8 67.29 95.64 48.12 NA 43.33

34 7 98.58 91.03 101.25 104.26 107.78

35 8 85.42 NA 56.25 103.52 64.72

36 5 88.09 63.39 74.38 93.70 50.83

37 6 95.05 70.24 52.50 NA 47.78

38 7 89.89 57.97 32.50 85.19 51.67

39 6 90.74 89.64 61.25 90.00 NA

40 7 95.00 94.36 89.38 100.93 85.00

41 6 28.14 NA 72.50 53.70 68.33

42 7 95.14 82.67 110.00 89.81 90.83

43 7 92.01 112.58 86.25 86.11 83.33

44 7 86.26 74.66 85.00 NA 82.22

45 6 57.14 34.09 66.88 51.48 55.83

46 7 93.83 57.32 NA 77.96 45.56

47 8 68.95 65.11 44.38 57.41 65.28

48 8 85.01 NA 91.25 83.33 72.22

49 8 95.90 99.99 95.62 105.56 102.22

50 8 92.46 95.75 61.88 NA 48.89

51 8 96.73 88.11 71.88 97.41 65.56

52 8 83.70 83.17 60.62 63.15 57.78

53 7 95.14 94.01 99.38 100.00 95.00

54 7 98.58 88.30 90.62 100.93 99.17

55 8 71.79 102.87 54.37 21.53 36.11

56 8 71.79 101.68 75.00 21.53 49.44

57 8 87.93 106.53 37.50 97.41 28.06

58 8 87.93 108.97 NA 87.96 47.78

59 8 68.95 65.11 40.00 57.41 78.89

60 7 72.85 86.85 41.25 60.37 46.67

61 8 71.79 102.87 41.88 24.77 NA

62 8 92.02 97.76 46.25 47.22 60.56

63 7 90.33 87.56 68.75 77.96 58.33

64 7 95.00 94.36 90.62 NA 101.11

65 7 91.28 108.71 96.25 99.81 88.89

66 8 97.00 103.02 93.12 106.48 94.44

67 8 93.01 104.18 55.00 96.85 67.22

68 8 92.02 NA 54.37 63.89 63.89

69 7 100.83 105.57 101.25 104.44 108.89

70 8 80.53 92.80 51.25 72.78 66.67

71 8 90.98 97.55 86.25 88.89 90.00

72 8 93.59 103.83 92.50 96.85 87.22

73 8 97.33 100.42 69.38 NA 83.06

74 7 84.26 91.31 63.12 83.33 75.56

75 8 84.26 96.66 52.50 83.33 50.00

76 7 93.83 102.19 NA 94.44 102.78

77 8 75.27 86.67 70.00 71.85 80.00

78 8 92.02 100.58 73.12 63.89 65.28

79 8 97.16 103.71 83.75 95.93 78.89

80 8 66.17 93.68 71.88 NA 61.39

81 8 81.22 91.95 79.38 105.93 90.00

82 7 74.29 65.70 78.75 103.52 55.00

83 8 97.33 106.74 76.88 108.89 83.89

84 4 86.86 62.64 NA 85.19 62.78

85 6 95.60 61.40 64.38 99.81 42.78

86 4 87.93 99.47 53.12 87.96 61.11

87 6 98.49 95.43 42.50 24.77 39.44

88 7 74.35 92.93 86.25 78.70 73.89

89 7 86.29 88.81 83.12 77.96 75.83

90 8 97.00 NA 64.38 90.74 58.61

91 8 97.33 106.74 81.25 108.89 71.11

92 8 96.41 103.71 56.25 95.93 66.39

93 7 95.60 82.28 76.88 108.33 78.33

94 8 87.52 91.58 56.25 NA 85.00

95 8 96.73 103.71 45.00 93.52 61.94

96 7 85.34 80.54 41.25 93.70 39.72

97 8 89.94 102.77 87.50 90.74 87.78

98 7 95.60 76.13 NA 99.81 85.56

99 8 63.40 97.37 73.12 72.78 77.22

**FUNCTIONS**

> length(grade)

[1] 6

PRINT ROWS THAT DON’T HAVE MISSING VALUES:

> grade[!is.na(grade)]

[1] 5.00 8.00 8.00 7.00 8.00 7.00 8.00 7.00 8.00 7.00

[11] 7.00 6.00 8.00 7.00 8.00 7.00 8.00 4.00 8.00 8.00

[21] 8.00 8.00 8.00 7.00 7.00 6.00 8.00 8.00 8.00 7.00

[31] 7.00 7.00 8.00 7.00 8.00 5.00 6.00 7.00 6.00 7.00

[41] 6.00 7.00 7.00 7.00 6.00 7.00 8.00 8.00 8.00 8.00

[51] 8.00 8.00 7.00 7.00 8.00 8.00 8.00 8.00 8.00 7.00

[61] 8.00 8.00 7.00 7.00 7.00 8.00 8.00 8.00 7.00 8.00

[71] 8.00 8.00 8.00 7.00 8.00 7.00 8.00 8.00 8.00 8.00

[81] 8.00 7.00 8.00 4.00 6.00 4.00 6.00 7.00 7.00 8.00

[91] 8.00 8.00 7.00 8.00 8.00 7.00 8.00 7.00 8.00 57.14

[101] 95.05 83.70 81.22 91.32 95.00 95.05 72.85 84.26 90.10 80.44

[111] 86.26 91.28 84.80 93.83 84.80 92.01 55.14 93.04 63.40 75.27

[121] 63.78 80.44 53.36 91.28 82.45 75.27 91.32 91.62 98.58 86.26

[131] 67.29 98.58 85.42 88.09 95.05 89.89 90.74 95.00 28.14 95.14

[141] 92.01 86.26 57.14 93.83 68.95 85.01 95.90 92.46 96.73 83.70

[151] 95.14 98.58 71.79 71.79 87.93 87.93 68.95 72.85 71.79 92.02

[161] 90.33 95.00 91.28 97.00 93.01 92.02 100.83 80.53 90.98 93.59

[171] 97.33 84.26 84.26 93.83 75.27 92.02 97.16 66.17 81.22 74.29

[181] 97.33 86.86 95.60 87.93 98.49 74.35 86.29 97.00 97.33 96.41

[191] 95.60 87.52 96.73 85.34 89.94 95.60 63.40 34.09 105.49 83.17

[201] 96.06 93.64 92.58 102.99 86.85 93.10 97.55 90.20 80.60 103.71

[211] 83.53 89.08 95.43 89.08 81.85 82.93 86.21 97.52 76.21 90.20

[221] 82.01 95.24 86.65 86.67 94.89 102.46 88.57 95.64 91.03 63.39

[231] 70.24 57.97 89.64 94.36 82.67 112.58 74.66 34.09 57.32 65.11

[241] 99.99 95.75 88.11 83.17 94.01 88.30 102.87 101.68 106.53 108.97

[251] 65.11 86.85 102.87 97.76 87.56 94.36 108.71 103.02 104.18 105.57

[261] 92.80 97.55 103.83 100.42 91.31 96.66 102.19 86.67 100.58 103.71

[271] 93.68 91.95 65.70 106.74 62.64 61.40 99.47 95.43 92.93 88.81

[281] 106.74 103.71 82.28 91.58 103.71 80.54 102.77 76.13 97.37 64.38

[291] 67.50 30.00 49.38 95.00 93.12 56.25 60.00 47.50 51.25 75.00

[301] 74.38 72.50 81.25 88.12 47.50 38.75 75.00 79.38 63.12 63.12

[311] 39.38 46.25 74.38 82.50 93.12 69.38 76.25 71.88 67.50 70.00

[321] 48.12 101.25 56.25 74.38 52.50 32.50 61.25 89.38 72.50 110.00

[331] 86.25 85.00 66.88 44.38 91.25 95.62 61.88 71.88 60.62 99.38

[341] 90.62 54.37 75.00 37.50 40.00 41.25 41.88 46.25 68.75 90.62

[351] 96.25 93.12 55.00 54.37 101.25 51.25 86.25 92.50 69.38 63.12

[361] 52.50 70.00 73.12 83.75 71.88 79.38 78.75 76.88 64.38 53.12

[371] 42.50 86.25 83.12 64.38 81.25 56.25 76.88 56.25 45.00 41.25

[381] 87.50 73.12 51.48 99.07 63.15 105.93 107.41 97.78 99.07 18.52

[391] 88.89 91.48 87.59 93.52 99.81 16.91 80.93 16.91 86.11 56.11

[401] 83.33 72.78 61.11 42.22 91.48 102.59 97.59 85.56 61.11 107.41

[411] 90.00 97.59 87.59 104.26 103.52 93.70 85.19 90.00 100.93 53.70

[421] 89.81 86.11 51.48 77.96 57.41 83.33 105.56 97.41 63.15 100.00

[431] 100.93 21.53 21.53 97.41 87.96 57.41 60.37 24.77 47.22 77.96

[441] 99.81 106.48 96.85 63.89 104.44 72.78 88.89 96.85 83.33 83.33

[451] 94.44 71.85 63.89 95.93 105.93 103.52 108.89 85.19 99.81 87.96

[461] 24.77 78.70 77.96 90.74 108.89 95.93 108.33 93.52 93.70 90.74

[471] 99.81 72.78 52.50 68.33 48.89 73.89 68.06 50.00 56.11 50.83

[481] 63.61 39.72 77.50 63.33 92.22 35.83 90.00 53.33 49.17 62.50

[491] 91.11 66.11 34.44 72.22 56.39 92.78 89.17 88.89 85.56 45.56

[501] 63.33 55.00 43.33 107.78 64.72 50.83 47.78 51.67 85.00 68.33

[511] 90.83 83.33 82.22 55.83 45.56 65.28 72.22 102.22 48.89 65.56

[521] 57.78 95.00 99.17 36.11 49.44 28.06 47.78 78.89 46.67 60.56

[531] 58.33 101.11 88.89 94.44 67.22 63.89 108.89 66.67 90.00 87.22

[541] 83.06 75.56 50.00 102.78 80.00 65.28 78.89 61.39 90.00 55.00

[551] 83.89 62.78 42.78 61.11 39.44 73.89 75.83 58.61 71.11 66.39

[561] 78.33 85.00 61.94 39.72 87.78 85.56 77.22

**REPLACE MISSING VALUES WITH ZERO:**

> grade[is.na(grade)]=0

> grade

Prefix Assignment Tutorial Midterm TakeHome Final

1 5 57.14 34.09 64.38 51.48 52.50

2 8 95.05 105.49 67.50 99.07 68.33

3 8 83.70 83.17 30.00 63.15 48.89

4 7 81.22 96.06 49.38 105.93 0.00

5 8 91.32 93.64 95.00 107.41 73.89

6 7 95.00 92.58 93.12 97.78 68.06

7 8 95.05 102.99 56.25 99.07 50.00

8 7 72.85 86.85 60.00 0.00 56.11

9 8 84.26 93.10 47.50 18.52 50.83

10 7 90.10 97.55 51.25 88.89 63.61

11 7 80.44 90.20 75.00 91.48 39.72

12 6 86.26 80.60 74.38 87.59 77.50

13 8 0.00 103.71 72.50 93.52 63.33

14 7 91.28 83.53 81.25 99.81 92.22

15 8 84.80 89.08 0.00 16.91 35.83

16 7 93.83 95.43 88.12 80.93 90.00

17 8 84.80 89.08 47.50 16.91 53.33

18 4 92.01 0.00 38.75 86.11 49.17

19 8 55.14 81.85 75.00 56.11 62.50

20 8 93.04 82.93 79.38 83.33 91.11

21 8 63.40 86.21 63.12 72.78 0.00

22 8 75.27 97.52 63.12 61.11 66.11

23 8 63.78 76.21 39.38 42.22 34.44

24 7 80.44 90.20 46.25 91.48 72.22

25 7 53.36 82.01 74.38 102.59 56.39

26 6 91.28 95.24 82.50 97.59 92.78

27 8 82.45 86.65 93.12 85.56 89.17

28 8 75.27 86.67 69.38 61.11 88.89

29 8 91.32 94.89 76.25 107.41 85.56

30 7 91.62 0.00 71.88 90.00 45.56

31 7 98.58 102.46 67.50 97.59 63.33

32 7 86.26 88.57 70.00 87.59 55.00

33 8 67.29 95.64 48.12 0.00 43.33

34 7 98.58 91.03 101.25 104.26 107.78

35 8 85.42 0.00 56.25 103.52 64.72

36 5 88.09 63.39 74.38 93.70 50.83

37 6 95.05 70.24 52.50 0.00 47.78

38 7 89.89 57.97 32.50 85.19 51.67

39 6 90.74 89.64 61.25 90.00 0.00

40 7 95.00 94.36 89.38 100.93 85.00

41 6 28.14 0.00 72.50 53.70 68.33

42 7 95.14 82.67 110.00 89.81 90.83

43 7 92.01 112.58 86.25 86.11 83.33

44 7 86.26 74.66 85.00 0.00 82.22

45 6 57.14 34.09 66.88 51.48 55.83

46 7 93.83 57.32 0.00 77.96 45.56

47 8 68.95 65.11 44.38 57.41 65.28

48 8 85.01 0.00 91.25 83.33 72.22

49 8 95.90 99.99 95.62 105.56 102.22

50 8 92.46 95.75 61.88 0.00 48.89

51 8 96.73 88.11 71.88 97.41 65.56

52 8 83.70 83.17 60.62 63.15 57.78

53 7 95.14 94.01 99.38 100.00 95.00

54 7 98.58 88.30 90.62 100.93 99.17

55 8 71.79 102.87 54.37 21.53 36.11

56 8 71.79 101.68 75.00 21.53 49.44

57 8 87.93 106.53 37.50 97.41 28.06

58 8 87.93 108.97 0.00 87.96 47.78

59 8 68.95 65.11 40.00 57.41 78.89

60 7 72.85 86.85 41.25 60.37 46.67

61 8 71.79 102.87 41.88 24.77 0.00

62 8 92.02 97.76 46.25 47.22 60.56

63 7 90.33 87.56 68.75 77.96 58.33

64 7 95.00 94.36 90.62 0.00 101.11

65 7 91.28 108.71 96.25 99.81 88.89

66 8 97.00 103.02 93.12 106.48 94.44

67 8 93.01 104.18 55.00 96.85 67.22

68 8 92.02 0.00 54.37 63.89 63.89

69 7 100.83 105.57 101.25 104.44 108.89

70 8 80.53 92.80 51.25 72.78 66.67

71 8 90.98 97.55 86.25 88.89 90.00

72 8 93.59 103.83 92.50 96.85 87.22

73 8 97.33 100.42 69.38 0.00 83.06

74 7 84.26 91.31 63.12 83.33 75.56

75 8 84.26 96.66 52.50 83.33 50.00

76 7 93.83 102.19 0.00 94.44 102.78

77 8 75.27 86.67 70.00 71.85 80.00

78 8 92.02 100.58 73.12 63.89 65.28

79 8 97.16 103.71 83.75 95.93 78.89

80 8 66.17 93.68 71.88 0.00 61.39

81 8 81.22 91.95 79.38 105.93 90.00

82 7 74.29 65.70 78.75 103.52 55.00

83 8 97.33 106.74 76.88 108.89 83.89

84 4 86.86 62.64 0.00 85.19 62.78

85 6 95.60 61.40 64.38 99.81 42.78

86 4 87.93 99.47 53.12 87.96 61.11

87 6 98.49 95.43 42.50 24.77 39.44

88 7 74.35 92.93 86.25 78.70 73.89

89 7 86.29 88.81 83.12 77.96 75.83

90 8 97.00 0.00 64.38 90.74 58.61

91 8 97.33 106.74 81.25 108.89 71.11

92 8 96.41 103.71 56.25 95.93 66.39

93 7 95.60 82.28 76.88 108.33 78.33

94 8 87.52 91.58 56.25 0.00 85.00

95 8 96.73 103.71 45.00 93.52 61.94

96 7 85.34 80.54 41.25 93.70 39.72

97 8 89.94 102.77 87.50 90.74 87.78

98 7 95.60 76.13 0.00 99.81 85.56

99 8 63.40 97.37 73.12 72.78 77.22

**NOW CHECK FOR ANY MISSING VALUES BY PRINTINGTOTAL NUMBER OF MISSING VALUES**

> sum(is.na(grade))

[1] 0

RE OPEN FILE TO DO ANOTHER PROCESSING AS NA VALUES ARE REPLACED WITH 0 ALREADY

> grade <- read.csv(file="C:/Users/Lenovo/Desktop/class-grades.csv",head=TRUE,sep=",")

SUM OF MISSING VALUE

> sum(is.na(grade))

[1] 27

**PRINT TRUE FOR MISSING VALUE IN DATA.ELSE FALSE. CHECK WHERE MISSING VALUES ARE IN DATA.**

> is.na(grade)

Prefix Assignment Tutorial Midterm TakeHome Final

[1,] FALSE FALSE FALSE FALSE FALSE FALSE

[2,] FALSE FALSE FALSE FALSE FALSE FALSE

[3,] FALSE FALSE FALSE FALSE FALSE FALSE

[4,] FALSE FALSE FALSE FALSE FALSE TRUE

[5,] FALSE FALSE FALSE FALSE FALSE FALSE

[6,] FALSE FALSE FALSE FALSE FALSE FALSE

[7,] FALSE FALSE FALSE FALSE FALSE FALSE

[8,] FALSE FALSE FALSE FALSE TRUE FALSE

[9,] FALSE FALSE FALSE FALSE FALSE FALSE

[10,] FALSE FALSE FALSE FALSE FALSE FALSE

[11,] FALSE FALSE FALSE FALSE FALSE FALSE

[12,] FALSE FALSE FALSE FALSE FALSE FALSE

[13,] FALSE TRUE FALSE FALSE FALSE FALSE

[14,] FALSE FALSE FALSE FALSE FALSE FALSE

[15,] FALSE FALSE FALSE TRUE FALSE FALSE

[16,] FALSE FALSE FALSE FALSE FALSE FALSE

[17,] FALSE FALSE FALSE FALSE FALSE FALSE

[18,] FALSE FALSE TRUE FALSE FALSE FALSE

[19,] FALSE FALSE FALSE FALSE FALSE FALSE

[20,] FALSE FALSE FALSE FALSE FALSE FALSE

[21,] FALSE FALSE FALSE FALSE FALSE TRUE

[22,] FALSE FALSE FALSE FALSE FALSE FALSE

[23,] FALSE FALSE FALSE FALSE FALSE FALSE

[24,] FALSE FALSE FALSE FALSE FALSE FALSE

[25,] FALSE FALSE FALSE FALSE FALSE FALSE

[26,] FALSE FALSE FALSE FALSE FALSE FALSE

[27,] FALSE FALSE FALSE FALSE FALSE FALSE

[28,] FALSE FALSE FALSE FALSE FALSE FALSE

[29,] FALSE FALSE FALSE FALSE FALSE FALSE

[30,] FALSE FALSE TRUE FALSE FALSE FALSE

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[35,] FALSE FALSE TRUE FALSE FALSE FALSE

[36,] FALSE FALSE FALSE FALSE FALSE FALSE

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[59,] FALSE FALSE FALSE FALSE FALSE FALSE

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[71,] FALSE FALSE FALSE FALSE FALSE FALSE

[72,] FALSE FALSE FALSE FALSE FALSE FALSE

[73,] FALSE FALSE FALSE FALSE TRUE FALSE

[74,] FALSE FALSE FALSE FALSE FALSE FALSE

[75,] FALSE FALSE FALSE FALSE FALSE FALSE

[76,] FALSE FALSE FALSE TRUE FALSE FALSE

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[87,] FALSE FALSE FALSE FALSE FALSE FALSE

[88,] FALSE FALSE FALSE FALSE FALSE FALSE

[89,] FALSE FALSE FALSE FALSE FALSE FALSE

[90,] FALSE FALSE TRUE FALSE FALSE FALSE

[91,] FALSE FALSE FALSE FALSE FALSE FALSE

[92,] FALSE FALSE FALSE FALSE FALSE FALSE

[93,] FALSE FALSE FALSE FALSE FALSE FALSE

[94,] FALSE FALSE FALSE FALSE TRUE FALSE

[95,] FALSE FALSE FALSE FALSE FALSE FALSE

[96,] FALSE FALSE FALSE FALSE FALSE FALSE

[97,] FALSE FALSE FALSE FALSE FALSE FALSE

[98,] FALSE FALSE FALSE TRUE FALSE FALSE

[99,] FALSE FALSE FALSE FALSE FALSE FALSE

**CALCULATE MEAN BY REMOVING AND INCLUDING NA VALUES**

> mean(final,na.rm=TRUE)

[1] 68.28653

> mean(final,na.rm=FALSE)

[1] NA

**PRINT ROW WITH MISSING VALUES**

> grade[!complete.cases(grade),]

Prefix Assignment Tutorial Midterm TakeHome Final

4 7 81.22 96.06 49.38 105.93 NA

8 7 72.85 86.85 60.00 NA 56.11

13 8 NA 103.71 72.50 93.52 63.33

15 8 84.80 89.08 NA 16.91 35.83

18 4 92.01 NA 38.75 86.11 49.17

21 8 63.40 86.21 63.12 72.78 NA

30 7 91.62 NA 71.88 90.00 45.56

33 8 67.29 95.64 48.12 NA 43.33

35 8 85.42 NA 56.25 103.52 64.72

37 6 95.05 70.24 52.50 NA 47.78

39 6 90.74 89.64 61.25 90.00 NA

41 6 28.14 NA 72.50 53.70 68.33

44 7 86.26 74.66 85.00 NA 82.22

46 7 93.83 57.32 NA 77.96 45.56

48 8 85.01 NA 91.25 83.33 72.22

50 8 92.46 95.75 61.88 NA 48.89

58 8 87.93 108.97 NA 87.96 47.78

61 8 71.79 102.87 41.88 24.77 NA

64 7 95.00 94.36 90.62 NA 101.11

68 8 92.02 NA 54.37 63.89 63.89

73 8 97.33 100.42 69.38 NA 83.06

76 7 93.83 102.19 NA 94.44 102.78

80 8 66.17 93.68 71.88 NA 61.39

84 4 86.86 62.64 NA 85.19 62.78

90 8 97.00 NA 64.38 90.74 58.61

94 8 87.52 91.58 56.25 NA 85.00

98 7 95.60 76.13 NA 99.81 85.56

**PRINT ROW THAT DON’T HAVE ANY MISSING VALUES**

> grade[complete.cases(grade),]

Prefix Assignment Tutorial Midterm TakeHome Final

1 5 57.14 34.09 64.38 51.48 52.50

2 8 95.05 105.49 67.50 99.07 68.33

3 8 83.70 83.17 30.00 63.15 48.89

5 8 91.32 93.64 95.00 107.41 73.89

6 7 95.00 92.58 93.12 97.78 68.06

7 8 95.05 102.99 56.25 99.07 50.00

9 8 84.26 93.10 47.50 18.52 50.83

10 7 90.10 97.55 51.25 88.89 63.61

11 7 80.44 90.20 75.00 91.48 39.72

12 6 86.26 80.60 74.38 87.59 77.50

14 7 91.28 83.53 81.25 99.81 92.22

16 7 93.83 95.43 88.12 80.93 90.00

17 8 84.80 89.08 47.50 16.91 53.33

19 8 55.14 81.85 75.00 56.11 62.50

20 8 93.04 82.93 79.38 83.33 91.11

22 8 75.27 97.52 63.12 61.11 66.11

23 8 63.78 76.21 39.38 42.22 34.44

24 7 80.44 90.20 46.25 91.48 72.22

25 7 53.36 82.01 74.38 102.59 56.39

26 6 91.28 95.24 82.50 97.59 92.78

27 8 82.45 86.65 93.12 85.56 89.17

28 8 75.27 86.67 69.38 61.11 88.89

29 8 91.32 94.89 76.25 107.41 85.56

31 7 98.58 102.46 67.50 97.59 63.33

32 7 86.26 88.57 70.00 87.59 55.00

34 7 98.58 91.03 101.25 104.26 107.78

36 5 88.09 63.39 74.38 93.70 50.83

38 7 89.89 57.97 32.50 85.19 51.67

40 7 95.00 94.36 89.38 100.93 85.00

42 7 95.14 82.67 110.00 89.81 90.83

43 7 92.01 112.58 86.25 86.11 83.33

45 6 57.14 34.09 66.88 51.48 55.83

47 8 68.95 65.11 44.38 57.41 65.28

49 8 95.90 99.99 95.62 105.56 102.22

51 8 96.73 88.11 71.88 97.41 65.56

52 8 83.70 83.17 60.62 63.15 57.78

53 7 95.14 94.01 99.38 100.00 95.00

54 7 98.58 88.30 90.62 100.93 99.17

55 8 71.79 102.87 54.37 21.53 36.11

56 8 71.79 101.68 75.00 21.53 49.44

57 8 87.93 106.53 37.50 97.41 28.06

59 8 68.95 65.11 40.00 57.41 78.89

60 7 72.85 86.85 41.25 60.37 46.67

62 8 92.02 97.76 46.25 47.22 60.56

63 7 90.33 87.56 68.75 77.96 58.33

65 7 91.28 108.71 96.25 99.81 88.89

66 8 97.00 103.02 93.12 106.48 94.44

67 8 93.01 104.18 55.00 96.85 67.22

69 7 100.83 105.57 101.25 104.44 108.89

70 8 80.53 92.80 51.25 72.78 66.67

71 8 90.98 97.55 86.25 88.89 90.00

72 8 93.59 103.83 92.50 96.85 87.22

74 7 84.26 91.31 63.12 83.33 75.56

75 8 84.26 96.66 52.50 83.33 50.00

77 8 75.27 86.67 70.00 71.85 80.00

78 8 92.02 100.58 73.12 63.89 65.28

79 8 97.16 103.71 83.75 95.93 78.89

81 8 81.22 91.95 79.38 105.93 90.00

82 7 74.29 65.70 78.75 103.52 55.00

83 8 97.33 106.74 76.88 108.89 83.89

85 6 95.60 61.40 64.38 99.81 42.78

86 4 87.93 99.47 53.12 87.96 61.11

87 6 98.49 95.43 42.50 24.77 39.44

88 7 74.35 92.93 86.25 78.70 73.89

89 7 86.29 88.81 83.12 77.96 75.83

91 8 97.33 106.74 81.25 108.89 71.11

92 8 96.41 103.71 56.25 95.93 66.39

93 7 95.60 82.28 76.88 108.33 78.33

95 8 96.73 103.71 45.00 93.52 61.94

96 7 85.34 80.54 41.25 93.70 39.72

97 8 89.94 102.77 87.50 90.74 87.78

99 8 63.40 97.37 73.12 72.78 77.22

**REPLACING NA VALUES WITH COLUMN MEANS**

> for(i in 1:ncol(grade)){

+ grade[is.na(grade[,i]), i] <- mean(grade[,i], na.rm = TRUE)

+ }

> grade

Prefix Assignment Tutorial Midterm TakeHome Final

1 5 57.14000 34.09000 64.38000 51.48000 52.50000

2 8 95.05000 105.49000 67.50000 99.07000 68.33000

3 8 83.70000 83.17000 30.00000 63.15000 48.89000

4 7 81.22000 96.06000 49.38000 105.93000 68.28653

5 8 91.32000 93.64000 95.00000 107.41000 73.89000

6 7 95.00000 92.58000 93.12000 97.78000 68.06000

7 8 95.05000 102.99000 56.25000 99.07000 50.00000

8 7 72.85000 86.85000 60.00000 81.46189 56.11000

9 8 84.26000 93.10000 47.50000 18.52000 50.83000

10 7 90.10000 97.55000 51.25000 88.89000 63.61000

11 7 80.44000 90.20000 75.00000 91.48000 39.72000

12 6 86.26000 80.60000 74.38000 87.59000 77.50000

13 8 85.37265 103.71000 72.50000 93.52000 63.33000

14 7 91.28000 83.53000 81.25000 99.81000 92.22000

15 8 84.80000 89.08000 68.50161 16.91000 35.83000

16 7 93.83000 95.43000 88.12000 80.93000 90.00000

17 8 84.80000 89.08000 47.50000 16.91000 53.33000

18 4 92.01000 89.80359 38.75000 86.11000 49.17000

19 8 55.14000 81.85000 75.00000 56.11000 62.50000

20 8 93.04000 82.93000 79.38000 83.33000 91.11000

21 8 63.40000 86.21000 63.12000 72.78000 68.28653

22 8 75.27000 97.52000 63.12000 61.11000 66.11000

23 8 63.78000 76.21000 39.38000 42.22000 34.44000

24 7 80.44000 90.20000 46.25000 91.48000 72.22000

25 7 53.36000 82.01000 74.38000 102.59000 56.39000

26 6 91.28000 95.24000 82.50000 97.59000 92.78000

27 8 82.45000 86.65000 93.12000 85.56000 89.17000

28 8 75.27000 86.67000 69.38000 61.11000 88.89000

29 8 91.32000 94.89000 76.25000 107.41000 85.56000

30 7 91.62000 89.80359 71.88000 90.00000 45.56000

31 7 98.58000 102.46000 67.50000 97.59000 63.33000

32 7 86.26000 88.57000 70.00000 87.59000 55.00000

33 8 67.29000 95.64000 48.12000 81.46189 43.33000

34 7 98.58000 91.03000 101.25000 104.26000 107.78000

35 8 85.42000 89.80359 56.25000 103.52000 64.72000

36 5 88.09000 63.39000 74.38000 93.70000 50.83000

37 6 95.05000 70.24000 52.50000 81.46189 47.78000

38 7 89.89000 57.97000 32.50000 85.19000 51.67000

39 6 90.74000 89.64000 61.25000 90.00000 68.28653

40 7 95.00000 94.36000 89.38000 100.93000 85.00000

41 6 28.14000 89.80359 72.50000 53.70000 68.33000

42 7 95.14000 82.67000 110.00000 89.81000 90.83000

43 7 92.01000 112.58000 86.25000 86.11000 83.33000

44 7 86.26000 74.66000 85.00000 81.46189 82.22000

45 6 57.14000 34.09000 66.88000 51.48000 55.83000

46 7 93.83000 57.32000 68.50161 77.96000 45.56000

47 8 68.95000 65.11000 44.38000 57.41000 65.28000

48 8 85.01000 89.80359 91.25000 83.33000 72.22000

49 8 95.90000 99.99000 95.62000 105.56000 102.22000

50 8 92.46000 95.75000 61.88000 81.46189 48.89000

51 8 96.73000 88.11000 71.88000 97.41000 65.56000

52 8 83.70000 83.17000 60.62000 63.15000 57.78000

53 7 95.14000 94.01000 99.38000 100.00000 95.00000

54 7 98.58000 88.30000 90.62000 100.93000 99.17000

55 8 71.79000 102.87000 54.37000 21.53000 36.11000

56 8 71.79000 101.68000 75.00000 21.53000 49.44000

57 8 87.93000 106.53000 37.50000 97.41000 28.06000

58 8 87.93000 108.97000 68.50161 87.96000 47.78000

59 8 68.95000 65.11000 40.00000 57.41000 78.89000

60 7 72.85000 86.85000 41.25000 60.37000 46.67000

61 8 71.79000 102.87000 41.88000 24.77000 68.28653

62 8 92.02000 97.76000 46.25000 47.22000 60.56000

63 7 90.33000 87.56000 68.75000 77.96000 58.33000

64 7 95.00000 94.36000 90.62000 81.46189 101.11000

65 7 91.28000 108.71000 96.25000 99.81000 88.89000

66 8 97.00000 103.02000 93.12000 106.48000 94.44000

67 8 93.01000 104.18000 55.00000 96.85000 67.22000

68 8 92.02000 89.80359 54.37000 63.89000 63.89000

69 7 100.83000 105.57000 101.25000 104.44000 108.89000

70 8 80.53000 92.80000 51.25000 72.78000 66.67000

71 8 90.98000 97.55000 86.25000 88.89000 90.00000

72 8 93.59000 103.83000 92.50000 96.85000 87.22000

73 8 97.33000 100.42000 69.38000 81.46189 83.06000

74 7 84.26000 91.31000 63.12000 83.33000 75.56000

75 8 84.26000 96.66000 52.50000 83.33000 50.00000

76 7 93.83000 102.19000 68.50161 94.44000 102.78000

77 8 75.27000 86.67000 70.00000 71.85000 80.00000

78 8 92.02000 100.58000 73.12000 63.89000 65.28000

79 8 97.16000 103.71000 83.75000 95.93000 78.89000

80 8 66.17000 93.68000 71.88000 81.46189 61.39000

81 8 81.22000 91.95000 79.38000 105.93000 90.00000

82 7 74.29000 65.70000 78.75000 103.52000 55.00000

83 8 97.33000 106.74000 76.88000 108.89000 83.89000

84 4 86.86000 62.64000 68.50161 85.19000 62.78000

85 6 95.60000 61.40000 64.38000 99.81000 42.78000

86 4 87.93000 99.47000 53.12000 87.96000 61.11000

87 6 98.49000 95.43000 42.50000 24.77000 39.44000

88 7 74.35000 92.93000 86.25000 78.70000 73.89000

89 7 86.29000 88.81000 83.12000 77.96000 75.83000

90 8 97.00000 89.80359 64.38000 90.74000 58.61000

91 8 97.33000 106.74000 81.25000 108.89000 71.11000

92 8 96.41000 103.71000 56.25000 95.93000 66.39000

93 7 95.60000 82.28000 76.88000 108.33000 78.33000

94 8 87.52000 91.58000 56.25000 81.46189 85.00000

95 8 96.73000 103.71000 45.00000 93.52000 61.94000

96 7 85.34000 80.54000 41.25000 93.70000 39.72000

97 8 89.94000 102.77000 87.50000 90.74000 87.78000

98 7 95.60000 76.13000 68.50161 99.81000 85.56000

99 8 63.40000 97.37000 73.12000 72.78000 77.22000

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