NASDAQ\_Composite.R

Administrator

Wed Sep 27 09:26:25 2017

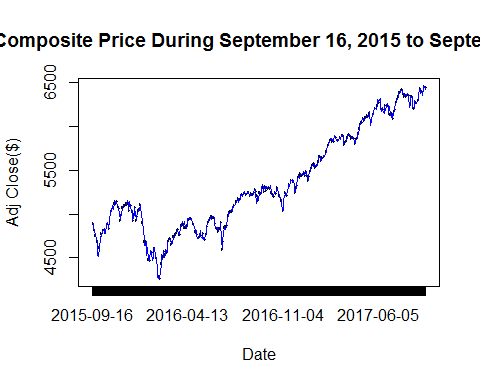
############################################################################################################################  
#Tosin Komolafe  
#Case Study 1  
#Statistics- 0617-B  
#Instructor: Professor Steven Stelk  
############################################################################################################################  
  
############################################################################################################################  
#STEP 1:Download data for last 2 years for the NASDAQ Composite.   
#Downloaded from Yahoo Finance  
#NASDAQ Composite Historical Data from September 16, 2015 - September 15, 2017  
############################################################################################################################  
  
nasdaq\_composite\_data = read.csv("IXIC.csv",header=TRUE, sep=",")  
nasdaq\_composite = nasdaq\_composite\_data[,c(1,6)] # 1 & 6 is the Date & Adj. Close Column respectively  
nasdaq\_composite

## Date Adj.Close  
## 1 2015-09-16 4889.24  
## 2 2015-09-17 4893.95  
## 3 2015-09-18 4827.23  
## 4 2015-09-21 4828.95  
## 5 2015-09-22 4756.72  
## 6 2015-09-23 4752.74  
## 7 2015-09-24 4734.48  
## 8 2015-09-25 4686.50  
## 9 2015-09-28 4543.97  
## 10 2015-09-29 4517.32  
## 11 2015-09-30 4620.16  
## 12 2015-10-01 4627.08  
## 13 2015-10-02 4707.78  
## 14 2015-10-05 4781.26  
## 15 2015-10-06 4748.36  
## 16 2015-10-07 4791.15  
## 17 2015-10-08 4810.79  
## 18 2015-10-09 4830.47  
## 19 2015-10-12 4838.64  
## 20 2015-10-13 4796.61  
## 21 2015-10-14 4782.85  
## 22 2015-10-15 4870.10  
## 23 2015-10-16 4886.69  
## 24 2015-10-19 4905.47  
## 25 2015-10-20 4880.97  
## 26 2015-10-21 4840.12  
## 27 2015-10-22 4920.05  
## 28 2015-10-23 5031.86  
## 29 2015-10-26 5034.70  
## 30 2015-10-27 5030.15  
## 31 2015-10-28 5095.69  
## 32 2015-10-29 5074.27  
## 33 2015-10-30 5053.75  
## 34 2015-11-02 5127.15  
## 35 2015-11-03 5145.13  
## 36 2015-11-04 5142.48  
## 37 2015-11-05 5127.74  
## 38 2015-11-06 5147.12  
## 39 2015-11-09 5095.30  
## 40 2015-11-10 5083.24  
## 41 2015-11-11 5067.02  
## 42 2015-11-12 5005.08  
## 43 2015-11-13 4927.88  
## 44 2015-11-16 4984.62  
## 45 2015-11-17 4986.02  
## 46 2015-11-18 5075.20  
## 47 2015-11-19 5073.64  
## 48 2015-11-20 5104.92  
## 49 2015-11-23 5102.48  
## 50 2015-11-24 5102.81  
## 51 2015-11-25 5116.14  
## 52 2015-11-27 5127.52  
## 53 2015-11-30 5108.67  
## 54 2015-12-01 5156.31  
## 55 2015-12-02 5123.22  
## 56 2015-12-03 5037.53  
## 57 2015-12-04 5142.27  
## 58 2015-12-07 5101.81  
## 59 2015-12-08 5098.24  
## 60 2015-12-09 5022.87  
## 61 2015-12-10 5045.17  
## 62 2015-12-11 4933.47  
## 63 2015-12-14 4952.23  
## 64 2015-12-15 4995.36  
## 65 2015-12-16 5071.13  
## 66 2015-12-17 5002.55  
## 67 2015-12-18 4923.08  
## 68 2015-12-21 4968.92  
## 69 2015-12-22 5001.11  
## 70 2015-12-23 5045.93  
## 71 2015-12-24 5048.49  
## 72 2015-12-28 5040.99  
## 73 2015-12-29 5107.94  
## 74 2015-12-30 5065.85  
## 75 2015-12-31 5007.41  
## 76 2016-01-04 4903.09  
## 77 2016-01-05 4891.43  
## 78 2016-01-06 4835.76  
## 79 2016-01-07 4689.43  
## 80 2016-01-08 4643.63  
## 81 2016-01-11 4637.99  
## 82 2016-01-12 4685.92  
## 83 2016-01-13 4526.06  
## 84 2016-01-14 4615.00  
## 85 2016-01-15 4488.42  
## 86 2016-01-19 4476.95  
## 87 2016-01-20 4471.69  
## 88 2016-01-21 4472.06  
## 89 2016-01-22 4591.18  
## 90 2016-01-25 4518.49  
## 91 2016-01-26 4567.67  
## 92 2016-01-27 4468.17  
## 93 2016-01-28 4506.68  
## 94 2016-01-29 4613.95  
## 95 2016-02-01 4620.37  
## 96 2016-02-02 4516.95  
## 97 2016-02-03 4504.24  
## 98 2016-02-04 4509.56  
## 99 2016-02-05 4363.14  
## 100 2016-02-08 4283.75  
## 101 2016-02-09 4268.76  
## 102 2016-02-10 4283.59  
## 103 2016-02-11 4266.84  
## 104 2016-02-12 4337.51  
## 105 2016-02-16 4435.96  
## 106 2016-02-17 4534.06  
## 107 2016-02-18 4487.54  
## 108 2016-02-19 4504.43  
## 109 2016-02-22 4570.61  
## 110 2016-02-23 4503.58  
## 111 2016-02-24 4542.61  
## 112 2016-02-25 4582.20  
## 113 2016-02-26 4590.47  
## 114 2016-02-29 4557.95  
## 115 2016-03-01 4689.60  
## 116 2016-03-02 4703.42  
## 117 2016-03-03 4707.42  
## 118 2016-03-04 4717.02  
## 119 2016-03-07 4708.25  
## 120 2016-03-08 4648.82  
## 121 2016-03-09 4674.38  
## 122 2016-03-10 4662.16  
## 123 2016-03-11 4748.47  
## 124 2016-03-14 4750.28  
## 125 2016-03-15 4728.67  
## 126 2016-03-16 4763.97  
## 127 2016-03-17 4774.99  
## 128 2016-03-18 4795.65  
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## 130 2016-03-22 4821.66  
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## 132 2016-03-24 4773.50  
## 133 2016-03-28 4766.79  
## 134 2016-03-29 4846.62  
## 135 2016-03-30 4869.29  
## 136 2016-03-31 4869.85  
## 137 2016-04-01 4914.54  
## 138 2016-04-04 4891.80  
## 139 2016-04-05 4843.93  
## 140 2016-04-06 4920.72  
## 141 2016-04-07 4848.37  
## 142 2016-04-08 4850.69  
## 143 2016-04-11 4833.40  
## 144 2016-04-12 4872.09  
## 145 2016-04-13 4947.42  
## 146 2016-04-14 4945.89  
## 147 2016-04-15 4938.22  
## 148 2016-04-18 4960.02  
## 149 2016-04-19 4940.33  
## 150 2016-04-20 4948.13  
## 151 2016-04-21 4945.89  
## 152 2016-04-22 4906.23  
## 153 2016-04-25 4895.79  
## 154 2016-04-26 4888.28  
## 155 2016-04-27 4863.14  
## 156 2016-04-28 4805.29  
## 157 2016-04-29 4775.36  
## 158 2016-05-02 4817.59  
## 159 2016-05-03 4763.22  
## 160 2016-05-04 4725.64  
## 161 2016-05-05 4717.09  
## 162 2016-05-06 4736.16  
## 163 2016-05-09 4750.21  
## 164 2016-05-10 4809.88  
## 165 2016-05-11 4760.69  
## 166 2016-05-12 4737.33  
## 167 2016-05-13 4717.68  
## 168 2016-05-16 4775.46  
## 169 2016-05-17 4715.73  
## 170 2016-05-18 4739.12  
## 171 2016-05-19 4712.53  
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## 173 2016-05-23 4765.78  
## 174 2016-05-24 4861.06  
## 175 2016-05-25 4894.89  
## 176 2016-05-26 4901.77  
## 177 2016-05-27 4933.50  
## 178 2016-05-31 4948.05  
## 179 2016-06-01 4952.25  
## 180 2016-06-02 4971.36  
## 181 2016-06-03 4942.52  
## 182 2016-06-06 4968.71  
## 183 2016-06-07 4961.75  
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## 186 2016-06-10 4894.55  
## 187 2016-06-13 4848.44  
## 188 2016-06-14 4843.55  
## 189 2016-06-15 4834.93  
## 190 2016-06-16 4844.92  
## 191 2016-06-17 4800.34  
## 192 2016-06-20 4837.21  
## 193 2016-06-21 4843.76  
## 194 2016-06-22 4833.32  
## 195 2016-06-23 4910.04  
## 196 2016-06-24 4707.98  
## 197 2016-06-27 4594.44  
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## 201 2016-07-01 4862.57  
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## 203 2016-07-06 4859.16  
## 204 2016-07-07 4876.81  
## 205 2016-07-08 4956.76  
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## 209 2016-07-14 5034.06  
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## 213 2016-07-20 5089.93  
## 214 2016-07-21 5073.90  
## 215 2016-07-22 5100.16  
## 216 2016-07-25 5097.63  
## 217 2016-07-26 5110.05  
## 218 2016-07-27 5139.81  
## 219 2016-07-28 5154.98  
## 220 2016-07-29 5162.13  
## 221 2016-08-01 5184.20  
## 222 2016-08-02 5137.73  
## 223 2016-08-03 5159.74  
## 224 2016-08-04 5166.25  
## 225 2016-08-05 5221.12  
## 226 2016-08-08 5213.14  
## 227 2016-08-09 5225.48  
## 228 2016-08-10 5204.58  
## 229 2016-08-11 5228.40  
## 230 2016-08-12 5232.89  
## 231 2016-08-15 5262.02  
## 232 2016-08-16 5227.11  
## 233 2016-08-17 5228.66  
## 234 2016-08-18 5240.15  
## 235 2016-08-19 5238.38  
## 236 2016-08-22 5244.60  
## 237 2016-08-23 5260.08  
## 238 2016-08-24 5217.69  
## 239 2016-08-25 5212.20  
## 240 2016-08-26 5218.92  
## 241 2016-08-29 5232.33  
## 242 2016-08-30 5222.99  
## 243 2016-08-31 5213.22  
## 244 2016-09-01 5227.21  
## 245 2016-09-02 5249.90  
## 246 2016-09-06 5275.91  
## 247 2016-09-07 5283.93  
## 248 2016-09-08 5259.48  
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## 250 2016-09-12 5211.89  
## 251 2016-09-13 5155.25  
## 252 2016-09-14 5173.77  
## 253 2016-09-15 5249.69  
## 254 2016-09-16 5244.57  
## 255 2016-09-19 5235.03  
## 256 2016-09-20 5241.35  
## 257 2016-09-21 5295.18  
## 258 2016-09-22 5339.52  
## 259 2016-09-23 5305.75  
## 260 2016-09-26 5257.49  
## 261 2016-09-27 5305.71  
## 262 2016-09-28 5318.55  
## 263 2016-09-29 5269.15  
## 264 2016-09-30 5312.00  
## 265 2016-10-03 5300.87  
## 266 2016-10-04 5289.66  
## 267 2016-10-05 5316.02  
## 268 2016-10-06 5306.85  
## 269 2016-10-07 5292.40  
## 270 2016-10-10 5328.67  
## 271 2016-10-11 5246.79  
## 272 2016-10-12 5239.02  
## 273 2016-10-13 5213.33  
## 274 2016-10-14 5214.16  
## 275 2016-10-17 5199.82  
## 276 2016-10-18 5243.84  
## 277 2016-10-19 5246.41  
## 278 2016-10-20 5241.83  
## 279 2016-10-21 5257.40  
## 280 2016-10-24 5309.83  
## 281 2016-10-25 5283.40  
## 282 2016-10-26 5250.27  
## 283 2016-10-27 5215.97  
## 284 2016-10-28 5190.10  
## 285 2016-10-31 5189.14  
## 286 2016-11-01 5153.58  
## 287 2016-11-02 5105.57  
## 288 2016-11-03 5058.41  
## 289 2016-11-04 5046.37  
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## 291 2016-11-08 5193.49  
## 292 2016-11-09 5251.07  
## 293 2016-11-10 5208.80  
## 294 2016-11-11 5237.11  
## 295 2016-11-14 5218.40  
## 296 2016-11-15 5275.62  
## 297 2016-11-16 5294.58  
## 298 2016-11-17 5333.97  
## 299 2016-11-18 5321.51  
## 300 2016-11-21 5368.86  
## 301 2016-11-22 5386.35  
## 302 2016-11-23 5380.68  
## 303 2016-11-25 5398.92  
## 304 2016-11-28 5368.81  
## 305 2016-11-29 5379.92  
## 306 2016-11-30 5323.68  
## 307 2016-12-01 5251.11  
## 308 2016-12-02 5255.65  
## 309 2016-12-05 5308.89  
## 310 2016-12-06 5333.00  
## 311 2016-12-07 5393.76  
## 312 2016-12-08 5417.36  
## 313 2016-12-09 5444.50  
## 314 2016-12-12 5412.54  
## 315 2016-12-13 5463.83  
## 316 2016-12-14 5436.67  
## 317 2016-12-15 5456.85  
## 318 2016-12-16 5437.16  
## 319 2016-12-19 5457.44  
## 320 2016-12-20 5483.94  
## 321 2016-12-21 5471.43  
## 322 2016-12-22 5447.42  
## 323 2016-12-23 5462.69  
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## 325 2016-12-28 5438.56  
## 326 2016-12-29 5432.09  
## 327 2016-12-30 5383.12  
## 328 2017-01-03 5429.08  
## 329 2017-01-04 5477.00  
## 330 2017-01-05 5487.94  
## 331 2017-01-06 5521.06  
## 332 2017-01-09 5531.82  
## 333 2017-01-10 5551.82  
## 334 2017-01-11 5563.65  
## 335 2017-01-12 5547.49  
## 336 2017-01-13 5574.12  
## 337 2017-01-17 5538.73  
## 338 2017-01-18 5555.65  
## 339 2017-01-19 5540.08  
## 340 2017-01-20 5555.33  
## 341 2017-01-23 5552.94  
## 342 2017-01-24 5600.96  
## 343 2017-01-25 5656.34  
## 344 2017-01-26 5655.18  
## 345 2017-01-27 5660.78  
## 346 2017-01-30 5613.71  
## 347 2017-01-31 5614.79  
## 348 2017-02-01 5642.65  
## 349 2017-02-02 5636.20  
## 350 2017-02-03 5666.77  
## 351 2017-02-06 5663.55  
## 352 2017-02-07 5674.22  
## 353 2017-02-08 5682.45  
## 354 2017-02-09 5715.18  
## 355 2017-02-10 5734.13  
## 356 2017-02-13 5763.96  
## 357 2017-02-14 5782.57  
## 358 2017-02-15 5819.44  
## 359 2017-02-16 5814.90  
## 360 2017-02-17 5838.58  
## 361 2017-02-21 5865.95  
## 362 2017-02-22 5860.63  
## 363 2017-02-23 5835.51  
## 364 2017-02-24 5845.31  
## 365 2017-02-27 5861.90  
## 366 2017-02-28 5825.44  
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## 368 2017-03-02 5861.22  
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## 370 2017-03-06 5849.18  
## 371 2017-03-07 5833.93  
## 372 2017-03-08 5837.55  
## 373 2017-03-09 5838.81  
## 374 2017-03-10 5861.73  
## 375 2017-03-13 5875.78  
## 376 2017-03-14 5856.82  
## 377 2017-03-15 5900.05  
## 378 2017-03-16 5900.76  
## 379 2017-03-17 5901.00  
## 380 2017-03-20 5901.53  
## 381 2017-03-21 5793.83  
## 382 2017-03-22 5821.64  
## 383 2017-03-23 5817.69  
## 384 2017-03-24 5828.74  
## 385 2017-03-27 5840.37  
## 386 2017-03-28 5875.14  
## 387 2017-03-29 5897.55  
## 388 2017-03-30 5914.34  
## 389 2017-03-31 5911.74  
## 390 2017-04-03 5894.68  
## 391 2017-04-04 5898.61  
## 392 2017-04-05 5864.48  
## 393 2017-04-06 5878.95  
## 394 2017-04-07 5877.81  
## 395 2017-04-10 5880.93  
## 396 2017-04-11 5866.77  
## 397 2017-04-12 5836.16  
## 398 2017-04-13 5805.15  
## 399 2017-04-17 5856.79  
## 400 2017-04-18 5849.47  
## 401 2017-04-19 5863.03  
## 402 2017-04-20 5916.78  
## 403 2017-04-21 5910.52  
## 404 2017-04-24 5983.82  
## 405 2017-04-25 6025.49  
## 406 2017-04-26 6025.23  
## 407 2017-04-27 6048.94  
## 408 2017-04-28 6047.61  
## 409 2017-05-01 6091.60  
## 410 2017-05-02 6095.37  
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## 412 2017-05-04 6075.34  
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## 416 2017-05-10 6129.14  
## 417 2017-05-11 6115.96  
## 418 2017-05-12 6121.23  
## 419 2017-05-15 6149.67  
## 420 2017-05-16 6169.87  
## 421 2017-05-17 6011.24  
## 422 2017-05-18 6055.13  
## 423 2017-05-19 6083.70  
## 424 2017-05-22 6133.62  
## 425 2017-05-23 6138.71  
## 426 2017-05-24 6163.02  
## 427 2017-05-25 6205.26  
## 428 2017-05-26 6210.19  
## 429 2017-05-30 6203.19  
## 430 2017-05-31 6198.52  
## 431 2017-06-01 6246.83  
## 432 2017-06-02 6305.80  
## 433 2017-06-05 6295.68  
## 434 2017-06-06 6275.06  
## 435 2017-06-07 6297.38  
## 436 2017-06-08 6321.76  
## 437 2017-06-09 6207.92  
## 438 2017-06-12 6175.46  
## 439 2017-06-13 6220.37  
## 440 2017-06-14 6194.89  
## 441 2017-06-15 6165.50  
## 442 2017-06-16 6151.76  
## 443 2017-06-19 6239.01  
## 444 2017-06-20 6188.03  
## 445 2017-06-21 6233.95  
## 446 2017-06-22 6236.69  
## 447 2017-06-23 6265.25  
## 448 2017-06-26 6247.15  
## 449 2017-06-27 6146.62  
## 450 2017-06-28 6234.41  
## 451 2017-06-29 6144.35  
## 452 2017-06-30 6140.42  
## 453 2017-07-03 6110.06  
## 454 2017-07-05 6150.86  
## 455 2017-07-06 6089.46  
## 456 2017-07-07 6153.08  
## 457 2017-07-10 6176.39  
## 458 2017-07-11 6193.30  
## 459 2017-07-12 6261.17  
## 460 2017-07-13 6274.44  
## 461 2017-07-14 6312.47  
## 462 2017-07-17 6314.43  
## 463 2017-07-18 6344.31  
## 464 2017-07-19 6385.04  
## 465 2017-07-20 6390.00  
## 466 2017-07-21 6387.75  
## 467 2017-07-24 6410.81  
## 468 2017-07-25 6412.17  
## 469 2017-07-26 6422.75  
## 470 2017-07-27 6382.19  
## 471 2017-07-28 6374.68  
## 472 2017-07-31 6348.12  
## 473 2017-08-01 6362.94  
## 474 2017-08-02 6362.65  
## 475 2017-08-03 6340.34  
## 476 2017-08-04 6351.56  
## 477 2017-08-07 6383.77  
## 478 2017-08-08 6370.46  
## 479 2017-08-09 6352.33  
## 480 2017-08-10 6216.87  
## 481 2017-08-11 6256.56  
## 482 2017-08-14 6340.23  
## 483 2017-08-15 6333.01  
## 484 2017-08-16 6345.11  
## 485 2017-08-17 6221.91  
## 486 2017-08-18 6216.53  
## 487 2017-08-21 6213.13  
## 488 2017-08-22 6297.48  
## 489 2017-08-23 6278.41  
## 490 2017-08-24 6271.33  
## 491 2017-08-25 6265.64  
## 492 2017-08-28 6283.02  
## 493 2017-08-29 6301.89  
## 494 2017-08-30 6368.31  
## 495 2017-08-31 6428.66  
## 496 2017-09-01 6435.33  
## 497 2017-09-05 6375.57  
## 498 2017-09-06 6393.31  
## 499 2017-09-07 6397.87  
## 500 2017-09-08 6360.19  
## 501 2017-09-11 6432.26  
## 502 2017-09-12 6454.28  
## 503 2017-09-13 6460.19  
## 504 2017-09-14 6429.08  
## 505 2017-09-15 6448.47

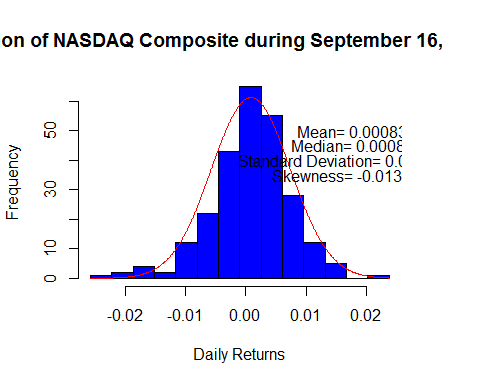
############################################################################################################################  
#STEP 2: Calculate Daily returns of NASDAQ composite for the last 1 year  
#NASDAQ one year will be from September 16, 2016 - September 15, 2017  
############################################################################################################################  
  
last\_one\_year\_nasdaq = nasdaq\_composite[c(which(nasdaq\_composite$Date=='2016-09-16'): which(nasdaq\_composite$Date=='2017-09-15')),]  
count = length(last\_one\_year\_nasdaq$Adj.Close)  
#daily\_returns = numeric(count)  
for (i in 1:count-1){  
 last\_one\_year\_nasdaq$Returns[i] = (last\_one\_year\_nasdaq$Adj.Close[i+1]/last\_one\_year\_nasdaq$Adj.Close[i]-1)  
}  
last\_one\_year\_nasdaq

## Date Adj.Close Returns  
## 254 2016-09-16 5244.57 -1.819032e-03  
## 255 2016-09-19 5235.03 1.207312e-03  
## 256 2016-09-20 5241.35 1.027027e-02  
## 257 2016-09-21 5295.18 8.373623e-03  
## 258 2016-09-22 5339.52 -6.324542e-03  
## 259 2016-09-23 5305.75 -9.095748e-03  
## 260 2016-09-26 5257.49 9.171625e-03  
## 261 2016-09-27 5305.71 2.420005e-03  
## 262 2016-09-28 5318.55 -9.288228e-03  
## 263 2016-09-29 5269.15 8.132260e-03  
## 264 2016-09-30 5312.00 -2.095234e-03  
## 265 2016-10-03 5300.87 -2.114740e-03  
## 266 2016-10-04 5289.66 4.983281e-03  
## 267 2016-10-05 5316.02 -1.724960e-03  
## 268 2016-10-06 5306.85 -2.722933e-03  
## 269 2016-10-07 5292.40 6.853227e-03  
## 270 2016-10-10 5328.67 -1.536591e-02  
## 271 2016-10-11 5246.79 -1.480909e-03  
## 272 2016-10-12 5239.02 -4.903578e-03  
## 273 2016-10-13 5213.33 1.592222e-04  
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## 276 2016-10-18 5243.84 4.901584e-04  
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## 283 2016-10-27 5215.97 -4.959790e-03  
## 284 2016-10-28 5190.10 -1.849600e-04  
## 285 2016-10-31 5189.14 -6.852784e-03  
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## 287 2016-11-02 5105.57 -9.236906e-03  
## 288 2016-11-03 5058.41 -2.380202e-03  
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## 292 2016-11-09 5251.07 -8.049792e-03  
## 293 2016-11-10 5208.80 5.435044e-03  
## 294 2016-11-11 5237.11 -3.572574e-03  
## 295 2016-11-14 5218.40 1.096509e-02  
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## 300 2016-11-21 5368.86 3.257719e-03  
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## 302 2016-11-23 5380.68 3.389859e-03  
## 303 2016-11-25 5398.92 -5.577016e-03  
## 304 2016-11-28 5368.81 2.069334e-03  
## 305 2016-11-29 5379.92 -1.045364e-02  
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## 308 2016-12-02 5255.65 1.013010e-02  
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## 311 2016-12-07 5393.76 4.375445e-03  
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## 325 2016-12-28 5438.56 -1.189693e-03  
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## 336 2017-01-13 5574.12 -6.349009e-03  
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## 339 2017-01-19 5540.08 2.752668e-03  
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## 350 2017-02-03 5666.77 -5.682629e-04  
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## 357 2017-02-14 5782.57 6.376078e-03  
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## 360 2017-02-17 5838.58 4.687804e-03  
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## 363 2017-02-23 5835.51 1.679424e-03  
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## 367 2017-03-01 5904.03 -7.250907e-03  
## 368 2017-03-02 5861.22 1.625905e-03  
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## 370 2017-03-06 5849.18 -2.607203e-03  
## 371 2017-03-07 5833.93 6.204443e-04  
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## 378 2017-03-16 5900.76 4.071238e-05  
## 379 2017-03-17 5901.00 8.977885e-05  
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## 383 2017-03-23 5817.69 1.899430e-03  
## 384 2017-03-24 5828.74 1.995265e-03  
## 385 2017-03-27 5840.37 5.953393e-03  
## 386 2017-03-28 5875.14 3.814321e-03  
## 387 2017-03-29 5897.55 2.846952e-03  
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## 390 2017-04-03 5894.68 6.666497e-04  
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## 396 2017-04-11 5866.77 -5.217499e-03  
## 397 2017-04-12 5836.16 -5.313469e-03  
## 398 2017-04-13 5805.15 8.895573e-03  
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## 400 2017-04-18 5849.47 2.318085e-03  
## 401 2017-04-19 5863.03 9.167615e-03  
## 402 2017-04-20 5916.78 -1.057968e-03  
## 403 2017-04-21 5910.52 1.240158e-02  
## 404 2017-04-24 5983.82 6.963848e-03  
## 405 2017-04-25 6025.49 -4.319217e-05  
## 406 2017-04-26 6025.23 3.935113e-03  
## 407 2017-04-27 6048.94 -2.198861e-04  
## 408 2017-04-28 6047.61 7.273987e-03  
## 409 2017-05-01 6091.60 6.188881e-04  
## 410 2017-05-02 6095.37 -3.743876e-03  
## 411 2017-05-03 6072.55 4.594510e-04  
## 412 2017-05-04 6075.34 4.184115e-03  
## 413 2017-05-05 6100.76 3.115005e-04  
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## 417 2017-05-11 6115.96 8.616830e-04  
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## 419 2017-05-15 6149.67 3.284761e-03  
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## 423 2017-05-19 6083.70 8.205520e-03  
## 424 2017-05-22 6133.62 8.298271e-04  
## 425 2017-05-23 6138.71 3.960125e-03  
## 426 2017-05-24 6163.02 6.853741e-03  
## 427 2017-05-25 6205.26 7.945155e-04  
## 428 2017-05-26 6210.19 -1.127180e-03  
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## 430 2017-05-31 6198.52 7.793805e-03  
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## 433 2017-06-05 6295.68 -3.275280e-03  
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## 437 2017-06-09 6207.92 -5.228798e-03  
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## 441 2017-06-15 6165.50 -2.228568e-03  
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## 446 2017-06-22 6236.69 4.579362e-03  
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## 448 2017-06-26 6247.15 -1.609210e-02  
## 449 2017-06-27 6146.62 1.428265e-02  
## 450 2017-06-28 6234.41 -1.444564e-02  
## 451 2017-06-29 6144.35 -6.396406e-04  
## 452 2017-06-30 6140.42 -4.944265e-03  
## 453 2017-07-03 6110.06 6.677480e-03  
## 454 2017-07-05 6150.86 -9.982328e-03  
## 455 2017-07-06 6089.46 1.044758e-02  
## 456 2017-07-07 6153.08 3.788356e-03  
## 457 2017-07-10 6176.39 2.737791e-03  
## 458 2017-07-11 6193.30 1.095864e-02  
## 459 2017-07-12 6261.17 2.119415e-03  
## 460 2017-07-13 6274.44 6.061142e-03  
## 461 2017-07-14 6312.47 3.104903e-04  
## 462 2017-07-17 6314.43 4.732000e-03  
## 463 2017-07-18 6344.31 6.419923e-03  
## 464 2017-07-19 6385.04 7.768097e-04  
## 465 2017-07-20 6390.00 -3.521127e-04  
## 466 2017-07-21 6387.75 3.610044e-03  
## 467 2017-07-24 6410.81 2.121203e-04  
## 468 2017-07-25 6412.17 1.650000e-03  
## 469 2017-07-26 6422.75 -6.315061e-03  
## 470 2017-07-27 6382.19 -1.176675e-03  
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## 472 2017-07-31 6348.12 2.334522e-03  
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## 485 2017-08-17 6221.91 -8.647459e-04  
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## 487 2017-08-21 6213.13 1.357610e-02  
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## 489 2017-08-23 6278.41 -1.127686e-03  
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## 495 2017-08-31 6428.66 1.037529e-03  
## 496 2017-09-01 6435.33 -9.286276e-03  
## 497 2017-09-05 6375.57 2.782533e-03  
## 498 2017-09-06 6393.31 7.132546e-04  
## 499 2017-09-07 6397.87 -5.889487e-03  
## 500 2017-09-08 6360.19 1.133140e-02  
## 501 2017-09-11 6432.26 3.423372e-03  
## 502 2017-09-12 6454.28 9.156957e-04  
## 503 2017-09-13 6460.19 -4.815627e-03  
## 504 2017-09-14 6429.08 3.016005e-03  
## 505 2017-09-15 6448.47 -1.819032e-03

############################################################################################################################  
#STEP 3: Graphically represent the stock prices as a line plot  
############################################################################################################################  
plot(nasdaq\_composite, xlab="Date", ylab="Adj Close($)", main="NASDAQ Composite Price During September 16, 2015 to September 15, 2017")  
lines(nasdaq\_composite,col="blue")



############################################################################################################################  
#STEP 4: Bucket the daily return values into bins and plot a histogram  
############################################################################################################################  
returns = last\_one\_year\_nasdaq$Returns  
min=min(returns)  
max=max(returns)  
mean=mean(returns)  
median=median(returns)  
sd=sd(returns)  
skewness=(3\*(mean-median))/sd  
par(oma=c(0,0,0,2))  
hist(returns, right=FALSE, breaks=seq(min,max,length=15),xlab="Daily Returns", ylab="Frequency",main="Daily Returns Distribution of NASDAQ Composite during September 16, 2016 - September 15, 2017",col=c("blue"))  
points(seq(min, max, length.out=500),dnorm(seq(min,max,length.out=500),mean, sd), type="l", col="red")  
  
############################################################################################################################  
#STEP 5: Calculate mean, median and standard deviation of Daily return values and plot them on the same graph mentioned in step IV  
############################################################################################################################  
  
text(0.02, 50, paste("Mean=", format(round(mean,8))))  
text(0.02, 45, paste("Median=", format(round(median,8),nsmall=8)))  
text(0.018, 40, paste("Standard Deviation=", format(round(sd,8),nsmall=8)))  
text(0.019, 35, paste("Skewness=", format(round(skewness,8),nsmall=8)))



############################################################################################################################  
# Based on your findings, evaluate the following:  
############################################################################################################################  
# Question 1: How is the daily returns of NASDAQ distributed? Does it follow a normal distribution?   
#  
# Answer: The daily returns of NASDAQ follows an approximately symmertic normal distribution with a bell-curve shape.   
# The skewness is around -0.013 which is closer to 0, mean is around 0.083% and standard deviation is around 0.65%.   
############################################################################################################################  
# Question 2: Are any obvious trends visible in movement of NASDAQ prices for the period under study?  
#  
# Answer: There is an uptrends. From early 2016 to the current date Sep 15, 2017  
# The trend begined with a big up-surge from the bottom of the valley and even though sometimes it goes down, it has still  
# remained an an upward momentum.  
############################################################################################################################  
# Question 3: Analyze the measures of central tendency calculated and offer opinion on the overall risks and possible rewards   
# associated with investing in the NASDAQ index for the period under study.  
#  
# Answer: During the period of study, we can earn so much return of investment in the uptrend period that began since early 2016  
# Imagine, if we invest in 2016 with about $4,200, by current date, our return of investment will be above 40%   
# However, there are some risk involved in this portfolio that can cause significant risk and also losses. But in this NASDAQ   
# composite, since it's a highly profitable portfolio, we can cut our loss when we reach a price surge less than 20-25%   
# between our purchase price and current price.  
###########################################################################################################################