Lab Assignment 8 – MA374
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Solution:

The code is endorsed in the folder submitted in the server

Output:

Question 1:

hist_var_bse =

  Columns 1 through 17

   0.1495   0.2108   0.3337   0.2270   0.3563   0.1479   0.2248   0.2336   0.3082   0.1817   0.3691   0.3635   0.1677   0.2551   0.1222   0.2570   0.2694

  Column 18

   0.1889

hist_var_nse =

  Columns 1 through 17

   0.1564   0.1878   0.1500   0.3192   0.1591   0.3999   0.3978   0.1996   0.2562   0.2135   0.2245   0.1911   0.1660   0.2710   0.1724   0.3201   0.1928

  Columns 18 through 20

   0.2865   0.4189   0.2656

Bse price of European call and put :

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 for k= 21170.680000,        call price is 1167.461887,     put price is 644.755935
 for k= 556.120000,     call price is 39.957094,        put price is 26.226442
 for k= 1069.900000,    call price is 113.017937,       put price is 86.602012
 for k= 330.450000,     call price is 25.209772,        put price is 17.050932
 for k= 91.350000,      call price is 10.216652,        put price is 7.961213
 for k= 570.950000,     call price is 31.233480,        put price is 17.136675
 for k= 567.750000,     call price is 42.962516,        put price is 28.944719
 for k= 1763.000000,    call price is 137.686644,       put price is 94.158019
 for k= 288.600000,     call price is 28.457653,        put price is 21.332094
 for k= 400.550000,     call price is 25.591693,        put price is 15.702078
 for k= 95.100000,      call price is 10.969598,        put price is 8.621570
 for k= 3351.510000,    call price is 381.435887,       put price is 298.686810
 for k= 256.290000,     call price is 15.397706,        put price is 9.069884
 for k= 29.200000,      call price is 2.453068,         put price is 1.732118
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for k= 1023.800000,   call price is 48.924195,   put price is 23.646483
for k= 54.500000,   call price is 4.606379,   put price is 3.260770
for k= 1207.100000,   call price is 106.145356,   put price is 76.341951
for k= 1056.550000,   call price is 69.564574,   put price is 43.478262

Nse price of European call and put :

 for k= 6304.000000, call price is 359.291726,   put price is 203.645412
for k= 321.850000,   call price is 21.099253,   put price is 13.152749
for k= 2534.600000,   call price is 140.076794,   put price is 77.497297
for k= 347.900000,   call price is 35.357570,   put price is 26.767888
for k= 3485.650000,   call price is 201.262249,   put price is 115.201244
for k= 1098.750000,   call price is 136.053280,   put price is 108.925046
for k= 175.420000,   call price is 21.617416,   put price is 17.286281
for k= 2168.190000,   call price is 149.105537,   put price is 95.572735
for k= 1766.500000,   call price is 148.908138,   put price is 105.293097
for k= 337.980000,   call price is 24.527820,   put price is 16.183064
for k= 1262.550000,   call price is 95.464016,   put price is 64.291546
for k= 1053.750000,   call price is 70.021410,   put price is 44.004230
for k= 274.900000,   call price is 16.389507,   put price is 9.602202
for k= 65.690000,   call price is 5.804837,   put price is 4.182945
for k= 72.450000,   call price is 4.445318,   put price is 2.656521
for k= 17.250000,   call price is 1.757352,   put price is 1.331448
for k= 1017.200000,   call price is 68.073914,   put price is 42.959156
for k= 61.590000,   call price is 5.705450,   put price is 4.184787
for k= 127.520000,   call price is 16.455520,   put price is 13.307040
for k= 19339.870000,   call price is 1680.287251,   put price is 1202.784159

BSE price of European call and put varying k:

for stock 1 the value is

for k= 10585.340000,   call price is 10846.692976,   put price is 0.000000
for k= 12702.408000,   call price is 8781.895634,   put price is 0.000064
for k= 14819.476000,   call price is 6717.167627,   put price is 0.069461
for k= 16936.544000,   call price is 4658.600436,   put price is 6.299675
for k= 19053.612000,   call price is 2697.343975,   put price is 109.840619
for k= 21170.680000,   call price is 1167.461887,   put price is 644.755935
for k= 23287.748000,   call price is 351.119396,   put price is 1893.210850
for k= 25404.816000,   call price is 72.886837,   put price is 3679.775695
for k= 27521.884000,   call price is 10.820972,   put price is 5682.507235
for k= 29638.952000,   call price is 1.207829,   put price is 7737.691497
for k= 31756.020000,   call price is 0.106530,   put price is 9801.387602

for stock 2 the value is

for k= 278.060000,   call price is 284.925334,   put price is 0.000008
for k= 333.672000,   call price is 230.688922,   put price is 0.002531
for k= 389.284000,   call price is 176.560895,   put price is 0.113438
for k= 444.896000,   call price is 123.664711,   put price is 1.456189
for k= 500.508000,   call price is 76.128130,   put price is 8.158544
for k= 556.120000,   call price is 39.957094,   put price is 26.226442
for k= 611.732000,   call price is 17.723173,   put price is 58.231456
for k= 667.344000,   call price is 6.705544,   put price is 101.452762
for k= 722.956000,   call price is 2.204967,   put price is 151.191120
for k= 778.568000,   call price is 0.643778,   put price is 203.868866
for k= 834.180000,   call price is 0.170352,   put price is 257.634375

for stock 3 the value is

for k= 534.950000,   call price is 548.215446,   put price is 0.057483
for k= 641.940000,   call price is 444.576031,   put price is 0.766476
for k= 748.930000,   call price is 344.091895,   put price is 4.630747
for k= 855.920000,   call price is 251.868236,   put price is 16.755496
for k= 962.910000,   call price is 173.687929,   put price is 42.923596
for k= 1069.900000,   call price is 113.017937,   put price is 86.602012
for k= 1176.890000,   call price is 69.755786,   put price is 147.688268
for k= 1283.880000,   call price is 41.122520,   put price is 223.403410
for k= 1390.870000,   call price is 23.323724,   put price is 309.953021
for k= 1497.860000,   call price is 12.814462,   put price is 403.792167
for k= 1604.850000,   call price is 6.861594,   put price is 502.187706

for stock 4 the value is

for k= 165.225000,   call price is 169.304449,   put price is 0.000029
for k= 198.270000,   call price is 137.079759,   put price is 0.004455
for k= 231.315000,   call price is 104.973350,   put price is 0.127163
for k= 264.360000,   call price is 73.850093,   put price is 1.233022
for k= 297.405000,   call price is 46.224521,   put price is 5.836565
for k= 330.450000,   call price is 25.209772,   put price is 17.050932
for k= 363.495000,   call price is 11.937097,   put price is 36.007373
for k= 396.540000,   call price is 4.955456,   put price is 61.254849
for k= 429.585000,   call price is 1.833032,   put price is 90.361540
for k= 462.630000,   call price is 0.615046,   put price is 121.372671
for k= 495.675000,   call price is 0.190392,   put price is 153.177132

for stock 5 the value is

for k= 45.675000,   call price is 46.812969,   put price is 0.010249
for k= 54.810000,   call price is 37.998352,   put price is 0.105088

for k= 63.945000,   call price is 29.519421,   put price is 0.535613
for k= 73.080000,   call price is 21.808775,   put price is 1.734423
for k= 82.215000,   call price is 15.298509,   put price is 4.133613
for k= 91.350000,   call price is 10.216652,   put price is 7.961213
for k= 100.485000,   call price is 6.529318,   put price is 13.183335
for k= 109.620000,   call price is 4.018179,   put price is 19.581652
for k= 118.755000,   call price is 2.396115,   put price is 26.869043
for k= 127.890000,   call price is 1.392533,   put price is 34.774917
for k= 137.025000,   call price is 0.792729,   put price is 43.084569

 for stock 6 the value is

for k= 285.475000,   call price is 292.523403,   put price is 0.000000
for k= 342.570000,   call price is 236.838085,   put price is 0.000001
for k= 399.665000,   call price is 181.154338,   put price is 0.001574
for k= 456.760000,   call price is 125.623030,   put price is 0.155586
for k= 513.855000,   call price is 72.630497,   put price is 2.848372
for k= 570.950000,   call price is 31.233480,   put price is 17.136675
for k= 628.045000,   call price is 9.252157,   put price is 50.840671
for k= 685.140000,   call price is 1.873052,   put price is 99.146886
for k= 742.235000,   call price is 0.268719,   put price is 153.227872
for k= 799.330000,   call price is 0.028760,   put price is 208.673232
for k= 856.425000,   call price is 0.002417,   put price is 264.332208

 for stock 7 the value is

for k= 283.875000,   call price is 290.883939,   put price is 0.000040
for k= 340.650000,   call price is 235.517342,   put price is 0.006663
for k= 397.425000,   call price is 180.338841,   put price is 0.201382
for k= 454.200000,   call price is 126.787713,   put price is 2.023475
for k= 510.975000,   call price is 79.177500,   put price is 9.786482
for k= 567.750000,   call price is 42.962516,   put price is 28.944719
for k= 624.525000,   call price is 20.171311,   put price is 61.526734
for k= 681.300000,   call price is 8.274601,   put price is 105.003245
for k= 738.075000,   call price is 3.015180,   put price is 155.117043
for k= 794.850000,   call price is 0.993972,   put price is 208.469056
for k= 851.625000,   call price is 0.301630,   put price is 263.149934

 for stock 8 the value is

for k= 881.500000,   call price is 903.264606,   put price is 0.000294
for k= 1057.800000,   call price is 731.352119,   put price is 0.034944
for k= 1234.100000,   call price is 560.221749,   put price is 0.851712
for k= 1410.400000,   call price is 394.905123,   put price is 7.482223
for k= 1586.700000,   call price is 248.836476,   put price is 33.360713
for k= 1763.000000,   call price is 137.686644,   put price is 94.158019

for k= 1939.300000,   call price is 66.769040,   put price is 195.187552
for k= 2115.600000,   call price is 28.654541,   put price is 329.020191
for k= 2291.900000,   call price is 11.051174,   put price is 483.363961
for k= 2468.200000,   call price is 3.894440,   put price is 648.154365
for k= 2644.500000,   call price is 1.273870,   put price is 817.480932

for stock 9 the value is

for k= 144.300000,   call price is 147.868441,   put price is 0.005662
for k= 173.160000,   call price is 119.824318,   put price is 0.108983
for k= 202.020000,   call price is 92.401877,   put price is 0.833985
for k= 230.880000,   call price is 66.936665,   put price is 3.516218
for k= 259.740000,   call price is 45.210206,   put price is 9.937203
for k= 288.600000,   call price is 28.457653,   put price is 21.332094
for k= 317.460000,   call price is 16.776370,   put price is 37.798255
for k= 346.320000,   call price is 9.335063,   put price is 58.504391
for k= 375.180000,   call price is 4.945564,   put price is 82.262337
for k= 404.040000,   call price is 2.515515,   put price is 107.979732
for k= 432.900000,   call price is 1.237729,   put price is 134.849390

for stock 10 the value is

for k= 200.275000,   call price is 205.219807,   put price is 0.000000
for k= 240.330000,   call price is 166.153899,   put price is 0.000130
for k= 280.385000,   call price is 127.105732,   put price is 0.018002
for k= 320.440000,   call price is 88.484186,   put price is 0.462494
for k= 360.495000,   call price is 52.857910,   put price is 3.902257
for k= 400.550000,   call price is 25.591693,   put price is 15.702078
for k= 440.605000,   call price is 9.778183,   put price is 38.954607
for k= 480.660000,   call price is 2.966614,   put price is 71.209076
for k= 520.715000,   call price is 0.732605,   put price is 108.041106
for k= 560.770000,   call price is 0.151867,   put price is 146.526406
for k= 600.825000,   call price is 0.027235,   put price is 185.467813

for stock 11 the value is

for k= 47.550000,   call price is 48.739392,   put price is 0.015378
for k= 57.060000,   call price is 39.587496,   put price is 0.138679
for k= 66.570000,   call price is 30.823855,   put price is 0.650235
for k= 76.080000,   call price is 22.891728,   put price is 1.993306
for k= 85.590000,   call price is 16.205919,   put price is 4.582695
for k= 95.100000,   call price is 10.969598,   put price is 8.621570
for k= 104.610000,   call price is 7.135874,   put price is 14.063044
for k= 114.120000,   call price is 4.487268,   put price is 20.689635
for k= 123.630000,   call price is 2.743439,   put price is 28.221004
for k= 133.140000,   call price is 1.639338,   put price is 36.392100

for k= 142.650000,   call price is 0.961828,   put price is 44.989787

for stock 12 the value is

for k= 1675.755000,   call price is 1717.593099,   put price is 0.463561
for k= 2010.906000,   call price is 1394.668890,   put price is 4.415444
for k= 2346.057000,   call price is 1084.830300,   put price is 21.452947
for k= 2681.208000,   call price is 803.822512,   put price is 67.321251
for k= 3016.359000,   call price is 566.800283,   put price is 157.175114
for k= 3351.510000,   call price is 381.435887,   put price is 298.686810
for k= 3686.661000,   call price is 246.247641,   put price is 490.374657
for k= 4021.812000,   call price is 153.423285,   put price is 724.426393
for k= 4356.963000,   call price is 92.804855,   put price is 990.684055
for k= 4692.114000,   call price is 54.800633,   put price is 1279.555926
for k= 5027.265000,   call price is 31.740870,   put price is 1583.372255

for stock 13 the value is

for k= 128.145000,   call price is 131.308911,   put price is 0.000000
for k= 153.774000,   call price is 106.312708,   put price is 0.000015
for k= 179.403000,   call price is 81.320816,   put price is 0.004340
for k= 205.032000,   call price is 56.497385,   put price is 0.177127
for k= 230.661000,   call price is 33.278988,   put price is 1.954947
for k= 256.290000,   call price is 15.397706,   put price is 9.069884
for k= 281.919000,   call price is 5.367176,   put price is 24.035571
for k= 307.548000,   call price is 1.412863,   put price is 45.077476
for k= 333.177000,   call price is 0.289073,   put price is 68.949903
for k= 358.806000,   call price is 0.047728,   put price is 93.704776
for k= 384.435000,   call price is 0.006599,   put price is 118.659865

for stock 14 the value is

for k= 14.600000,   call price is 14.960504,   put price is 0.000029
for k= 17.520000,   call price is 12.114275,   put price is 0.001704
for k= 20.440000,   call price is 9.291536,   put price is 0.026870
for k= 23.360000,   call price is 6.596285,   put price is 0.179524
for k= 26.280000,   call price is 4.245836,   put price is 0.676980
for k= 29.200000,   call price is 2.453068,   put price is 1.732118
for k= 32.120000,   call price is 1.274256,   put price is 3.401210
for k= 35.040000,   call price is 0.600765,   put price is 5.575624
for k= 37.960000,   call price is 0.260399,   put price is 8.083164
for k= 40.880000,   call price is 0.105167,   put price is 10.775837
for k= 43.800000,   call price is 0.040072,   put price is 13.558646

for stock 15 the value is

for k= 511.900000,   call price is 524.538856,   put price is 0.000000
for k= 614.280000,   call price is 424.686627,   put price is 0.000000
for k= 716.660000,   call price is 324.834474,   put price is 0.000075
for k= 819.040000,   call price is 225.028650,   put price is 0.046481
for k= 921.420000,   call price is 127.507329,   put price is 2.377388
for k= 1023.800000,   call price is 48.924195,   put price is 23.646483
for k= 1126.180000,   call price is 10.739075,   put price is 85.313592
for k= 1228.560000,   call price is 1.294098,   put price is 175.720843
for k= 1330.940000,   call price is 0.090179,   put price is 274.369153
for k= 1433.320000,   call price is 0.003949,   put price is 374.135152
for k= 1535.700000,   call price is 0.000118,   put price is 473.983550

 for stock 16 the value is

for k= 27.250000,   call price is 27.922866,   put price is 0.000061
for k= 32.700000,   call price is 22.610821,   put price is 0.003455
for k= 38.150000,   call price is 17.344631,   put price is 0.052705
for k= 43.600000,   call price is 12.321401,   put price is 0.344913
for k= 49.050000,   call price is 7.945195,   put price is 1.284146
for k= 54.500000,   call price is 4.606379,   put price is 3.260770
for k= 59.950000,   call price is 2.405695,   put price is 6.375524
for k= 65.400000,   call price is 1.142428,   put price is 10.427696
for k= 70.850000,   call price is 0.499608,   put price is 15.100316
for k= 76.300000,   call price is 0.203872,   put price is 20.120018
for k= 81.750000,   call price is 0.078582,   put price is 25.310168

 for stock 17 the value is

for k= 603.550000,   call price is 618.454797,   put price is 0.003094
for k= 724.260000,   call price is 500.849812,   put price is 0.127769
for k= 844.970000,   call price is 384.584655,   put price is 1.592271
for k= 965.680000,   call price is 274.430637,   put price is 9.167913
for k= 1086.390000,   call price is 179.061098,   put price is 31.528034
for k= 1207.100000,   call price is 106.145356,   put price is 76.341951
for k= 1327.810000,   call price is 57.343021,   put price is 145.269275
for k= 1448.520000,   call price is 28.489003,   put price is 234.144917
for k= 1569.230000,   call price is 13.167072,   put price is 336.552645
for k= 1689.940000,   call price is 5.727988,   put price is 446.843220
for k= 1810.650000,   call price is 2.370861,   put price is 561.215753

 for stock 18 the value is

for k= 528.275000,   call price is 541.318157,   put price is 0.000001
for k= 633.930000,   call price is 438.272516,   put price is 0.000728
for k= 739.585000,   call price is 335.298182,   put price is 0.072764

for k= 845.240000,   call price is 233.711215,   put price is 1.532165
for k= 950.895000,   call price is 140.638950,   put price is 11.506268
for k= 1056.550000,   call price is 69.564574,   put price is 43.478262
for k= 1162.205000,   call price is 27.697598,   put price is 104.657655
for k= 1267.860000,   call price is 8.942662,   put price is 188.949087
for k= 1373.515000,   call price is 2.395941,   put price is 285.448735
for k= 1479.170000,   call price is 0.547821,   put price is 386.646984
for k= 1584.825000,   call price is 0.109851,   put price is 489.255382

NSE price of European call and put varying k:

for stock 1 the value is

for k= 3152.000000,   call price is 3229.823157,   put price is 0.000000
for k= 3782.400000,   call price is 2614.987853,   put price is 0.000064
for k= 4412.800000,   call price is 2000.193077,   put price is 0.040657
for k= 5043.200000,   call price is 1387.963796,   put price is 2.646745
for k= 5673.600000,   call price is 808.680758,   put price is 38.199075
for k= 6304.000000,   call price is 359.291726,   put price is 203.645412
for k= 6934.400000,   call price is 114.716526,   put price is 573.905580
for k= 7564.800000,   call price is 26.255543,   put price is 1100.279965
for k= 8195.200000,   call price is 4.450914,   put price is 1693.310705
for k= 8825.600000,   call price is 0.584415,   put price is 2304.279575
for k= 9456.000000,   call price is 0.062131,   put price is 2918.592659

for stock 2 the value is

for k= 160.925000,   call price is 164.898253,   put price is 0.000000
for k= 193.110000,   call price is 133.508103,   put price is 0.000200
for k= 225.295000,   call price is 102.138433,   put price is 0.020880
for k= 257.480000,   call price is 71.179218,   put price is 0.452014
for k= 289.665000,   call price is 42.787066,   put price is 3.450212
for k= 321.850000,   call price is 21.099253,   put price is 13.152749
for k= 354.035000,   call price is 8.352140,   put price is 31.795985
for k= 386.220000,   call price is 2.673233,   put price is 57.507427
for k= 418.405000,   call price is 0.708113,   put price is 86.932657
for k= 450.590000,   call price is 0.159709,   put price is 117.774603
for k= 482.775000,   call price is 0.031531,   put price is 149.036774

for stock 3 the value is

for k= 1267.300000,   call price is 1298.589748,   put price is 0.000000
for k= 1520.760000,   call price is 1051.387706,   put price is 0.000008
for k= 1774.220000,   call price is 804.194361,   put price is 0.008713

for k= 2027.680000,   call price is 557.755863,   put price is 0.772265
for k= 2281.140000,   call price is 323.071689,   put price is 13.290142
for k= 2534.600000,   call price is 140.076794,   put price is 77.497297
for k= 2788.060000,   call price is 42.301252,   put price is 226.923806
for k= 3041.520000,   call price is 8.840388,   put price is 440.664991
for k= 3294.980000,   call price is 1.324574,   put price is 680.351228
for k= 3548.440000,   call price is 0.149522,   put price is 926.378227
for k= 3801.900000,   call price is 0.013360,   put price is 1173.444114

for stock 4 the value is

for k= 173.950000,   call price is 178.255649,   put price is 0.010808
for k= 208.740000,   call price is 144.489587,   put price is 0.175778
for k= 243.530000,   call price is 111.589811,   put price is 1.207034
for k= 278.320000,   call price is 81.197183,   put price is 4.745438
for k= 313.110000,   call price is 55.345277,   put price is 12.824563
for k= 347.900000,   call price is 35.357570,   put price is 26.767888
for k= 382.690000,   call price is 21.280043,   put price is 46.621393
for k= 417.480000,   call price is 12.155490,   put price is 71.427872
for k= 452.270000,   call price is 6.642988,   put price is 99.846402
for k= 487.060000,   call price is 3.500011,   put price is 130.634457
for k= 521.850000,   call price is 1.790066,   put price is 162.855544

for stock 5 the value is

for k= 1742.825000,   call price is 1785.855503,   put price is 0.000000
for k= 2091.390000,   call price is 1445.896659,   put price is 0.000056
for k= 2439.955000,   call price is 1105.966585,   put price is 0.028882
for k= 2788.520000,   call price is 767.643043,   put price is 1.664239
for k= 3137.085000,   call price is 448.418830,   put price is 22.398925
for k= 3485.650000,   call price is 201.262249,   put price is 115.201244
for k= 3834.215000,   call price is 65.722429,   put price is 319.620323
for k= 4182.780000,   call price is 15.597563,   put price is 609.454357
for k= 4531.345000,   call price is 2.776885,   put price is 936.592579
for k= 4879.910000,   call price is 0.387083,   put price is 1274.161676
for k= 5228.475000,   call price is 0.044078,   put price is 1613.777570

for stock 6 the value is

for k= 549.375000,   call price is 563.320287,   put price is 0.381170
for k= 659.250000,   call price is 458.419116,   put price is 2.642175
for k= 769.125000,   call price is 359.047105,   put price is 10.432341
for k= 879.000000,   call price is 269.996185,   put price is 28.543598
for k= 988.875000,   call price is 195.146253,   put price is 60.855842
for k= 1098.750000,   call price is 136.053280,   put price is 108.925046
for k= 1208.625000,   call price is 91.932799,   put price is 171.966742

for k= 1318.500000,   call price is 60.509444,   put price is 247.705563
for k= 1428.375000,   call price is 38.978748,   put price is 333.337044
for k= 1538.250000,   call price is 24.678794,   put price is 426.199267
for k= 1648.125000,   call price is 15.413425,   put price is 524.096074

 for stock 7 the value is

for k= 87.710000,   call price is 89.933537,   put price is 0.057969
for k= 105.252000,   call price is 73.175206,   put price is 0.408525
for k= 122.794000,   call price is 57.288384,   put price is 1.630590
for k= 140.336000,   call price is 43.042567,   put price is 4.493659
for k= 157.878000,   call price is 31.066848,   put price is 9.626826
for k= 175.420000,   call price is 21.617416,   put price is 17.286281
for k= 192.962000,   call price is 14.571243,   put price is 27.348994
for k= 210.504000,   call price is 9.562639,   put price is 39.449276
for k= 228.046000,   call price is 6.139537,   put price is 53.135062
for k= 245.588000,   call price is 3.872905,   put price is 67.977316
for k= 263.130000,   call price is 2.409319,   put price is 83.622616

 for stock 8 the value is

for k= 1084.095000,   call price is 1110.861408,   put price is 0.000007
for k= 1300.914000,   call price is 899.399707,   put price is 0.004026
for k= 1517.733000,   call price is 688.193350,   put price is 0.263389
for k= 1734.552000,   call price is 480.737053,   put price is 4.272811
for k= 1951.371000,   call price is 292.512858,   put price is 27.514337
for k= 2168.190000,   call price is 149.105537,   put price is 95.572735
for k= 2385.009000,   call price is 62.777624,   put price is 220.710542
for k= 2601.828000,   call price is 22.019502,   put price is 391.418140
for k= 2818.647000,   call price is 6.569424,   put price is 587.433782
for k= 3035.466000,   call price is 1.708407,   put price is 794.038484
for k= 3252.285000,   call price is 0.396527,   put price is 1004.192325

 for stock 9 the value is

for k= 883.250000,   call price is 905.059380,   put price is 0.001860
for k= 1059.900000,   call price is 732.877030,   put price is 0.108006
for k= 1236.550000,   call price is 562.152086,   put price is 1.671558
for k= 1413.200000,   call price is 399.230714,   put price is 11.038682
for k= 1589.850000,   call price is 257.232119,   put price is 41.328583
for k= 1766.500000,   call price is 148.908138,   put price is 105.293097
for k= 1943.150000,   call price is 77.584767,   put price is 206.258223
for k= 2119.800000,   call price is 36.727337,   put price is 337.689288
for k= 2296.450000,   call price is 15.999196,   put price is 489.249643
for k= 2473.100000,   call price is 6.499239,   put price is 652.038182
for k= 2649.750000,   call price is 2.492524,   put price is 820.319964

for stock 10 the value is

for k= 168.990000,   call price is 173.162385,   put price is 0.000007
for k= 202.788000,   call price is 140.200717,   put price is 0.001864
for k= 236.586000,   call price is 107.312404,   put price is 0.077075
for k= 270.384000,   call price is 75.213137,   put price is 0.941332
for k= 304.182000,   call price is 46.427524,   put price is 5.119244
for k= 337.980000,   call price is 24.527820,   put price is 16.183064
for k= 371.778000,   call price is 11.003723,   put price is 35.622491
for k= 405.576000,   call price is 4.231666,   put price is 61.813959
for k= 439.374000,   call price is 1.420735,   put price is 91.966553
for k= 473.172000,   call price is 0.425164,   put price is 123.934506
for k= 506.970000,   call price is 0.115683,   put price is 156.588550

for stock 11 the value is

for k= 631.275000,   call price is 646.861322,   put price is 0.000087
for k= 757.530000,   call price is 523.738101,   put price is 0.014619
for k= 883.785000,   call price is 401.030011,   put price is 0.444282
for k= 1010.040000,   call price is 281.927663,   put price is 4.479687
for k= 1136.295000,   call price is 176.021686,   put price is 21.711463
for k= 1262.550000,   call price is 95.464016,   put price is 64.291546
for k= 1388.805000,   call price is 44.784227,   put price is 136.749509
for k= 1515.060000,   call price is 18.349880,   put price is 233.452915
for k= 1641.315000,   call price is 6.676707,   put price is 344.917495
for k= 1767.570000,   call price is 2.197216,   put price is 463.575757
for k= 1893.825000,   call price is 0.665469,   put price is 585.181763

for stock 12 the value is

for k= 526.875000,   call price is 539.883591,   put price is 0.000001
for k= 632.250000,   call price is 437.111212,   put price is 0.000904
for k= 737.625000,   call price is 334.419238,   put price is 0.082211
for k= 843.000000,   call price is 233.197790,   put price is 1.634046
for k= 948.375000,   call price is 140.652713,   put price is 11.862251
for k= 1053.750000,   call price is 70.021410,   put price is 44.004230
for k= 1159.125000,   call price is 28.220838,   put price is 104.976939
for k= 1264.500000,   call price is 9.278921,   put price is 188.808305
for k= 1369.875000,   call price is 2.545715,   put price is 284.848381
for k= 1475.250000,   call price is 0.598866,   put price is 385.674813
for k= 1580.625000,   call price is 0.124037,   put price is 487.973267

for stock 13 the value is

for k= 137.450000,   call price is 140.843653,   put price is 0.000000
for k= 164.940000,   call price is 114.032396,   put price is 0.000012
for k= 192.430000,   call price is 87.225191,   put price is 0.004077
for k= 219.920000,   call price is 60.587176,   put price is 0.177332
for k= 247.410000,   call price is 35.628926,   put price is 2.030351
for k= 274.900000,   call price is 16.389507,   put price is 9.602202
for k= 302.390000,   call price is 5.643491,   put price is 25.667455
for k= 329.880000,   call price is 1.457290,   put price is 48.292524
for k= 357.370000,   call price is 0.290593,   put price is 73.937096
for k= 384.860000,   call price is 0.046504,   put price is 100.504276
for k= 412.350000,   call price is 0.006204,   put price is 127.275246

 for stock 14 the value is

for k= 32.845000,   call price is 33.656132,   put price is 0.000186
for k= 39.414000,   call price is 27.256524,   put price is 0.007388
for k= 45.983000,   call price is 20.932238,   put price is 0.089914
for k= 52.552000,   call price is 14.945467,   put price is 0.509953
for k= 59.121000,   call price is 9.766010,   put price is 1.737307
for k= 65.690000,   call price is 5.804837,   put price is 4.182945
for k= 72.259000,   call price is 3.148705,   put price is 7.933623
for k= 78.828000,   call price is 1.572750,   put price is 12.764480
for k= 85.397000,   call price is 0.731665,   put price is 18.330205
for k= 91.966000,   call price is 0.320702,   put price is 24.326053
for k= 98.535000,   call price is 0.133859,   put price is 30.546021

 for stock 15 the value is

for k= 36.225000,   call price is 37.119398,   put price is 0.000000
for k= 43.470000,   call price is 30.053286,   put price is 0.000008
for k= 50.715000,   call price is 22.988900,   put price is 0.001742
for k= 57.960000,   call price is 15.981177,   put price is 0.060139
for k= 65.205000,   call price is 9.457423,   put price is 0.602506
for k= 72.450000,   call price is 4.445318,   put price is 2.656521
for k= 79.695000,   call price is 1.600861,   put price is 6.878184
for k= 86.940000,   call price is 0.443436,   put price is 12.786880
for k= 94.185000,   call price is 0.097096,   put price is 19.506660
for k= 101.430000,   call price is 0.017406,   put price is 26.493090
for k= 108.675000,   call price is 0.002644,   put price is 33.544449

 for stock 16 the value is

for k= 8.625000,   call price is 8.838507,   put price is 0.000555
for k= 10.350000,   call price is 7.164456,   put price is 0.008913
for k= 12.075000,   call price is 5.533833,   put price is 0.060700
for k= 13.800000,   call price is 4.028091,   put price is 0.237368

for k= 15.525000,   call price is 2.747599,   put price is 0.639286
for k= 17.250000,   call price is 1.757352,   put price is 1.331448
for k= 18.975000,   call price is 1.059366,   put price is 2.315871
for k= 20.700000,   call price is 0.606350,   put price is 3.545265
for k= 22.425000,   call price is 0.332163,   put price is 4.953488
for k= 24.150000,   call price is 0.175481,   put price is 6.479215
for k= 25.875000,   call price is 0.090015,   put price is 8.076159

for stock 17 the value is

for k= 508.600000,   call price is 521.157380,   put price is 0.000001
for k= 610.320000,   call price is 421.949884,   put price is 0.001029
for k= 712.040000,   call price is 322.827547,   put price is 0.087217
for k= 813.760000,   call price is 225.191490,   put price is 1.659684
for k= 915.480000,   call price is 136.066862,   put price is 11.743580
for k= 1017.200000,   call price is 68.073914,   put price is 42.959156
for k= 1118.920000,   call price is 27.690886,   put price is 101.784653
for k= 1220.640000,   call price is 9.230972,   put price is 182.533263
for k= 1322.360000,   call price is 2.578363,   put price is 275.089178
for k= 1424.080000,   call price is 0.619713,   put price is 372.339052
for k= 1525.800000,   call price is 0.131528,   put price is 471.059392

for stock 18 the value is

for k= 30.795000,   call price is 31.555755,   put price is 0.000424
for k= 36.954000,   call price is 25.560446,   put price is 0.012049
for k= 43.113000,   call price is 19.659787,   put price is 0.118323
for k= 49.272000,   call price is 14.119944,   put price is 0.585414
for k= 55.431000,   call price is 9.358486,   put price is 1.830890
for k= 61.590000,   call price is 5.705450,   put price is 4.184787
for k= 67.749000,   call price is 3.213011,   put price is 7.699282
for k= 73.908000,   call price is 1.685684,   put price is 12.178889
for k= 80.067000,   call price is 0.832295,   put price is 17.332433
for k= 86.226000,   call price is 0.390642,   put price is 22.897715
for k= 92.385000,   call price is 0.175900,   put price is 28.689906

for stock 19 the value is

for k= 63.760000,   call price is 65.400284,   put price is 0.066044
for k= 76.512000,   call price is 53.297030,   put price is 0.399942
for k= 89.264000,   call price is 41.904934,   put price is 1.444998
for k= 102.016000,   call price is 31.749117,   put price is 3.726333
for k= 114.768000,   call price is 23.220909,   put price is 7.635277
for k= 127.520000,   call price is 16.455520,   put price is 13.307040
for k= 140.272000,   call price is 11.349649,   put price is 20.638321
for k= 153.024000,   call price is 7.653723,   put price is 29.379547

for k= 165.776000,   call price is 5.067789,   put price is 39.230765
for k= 178.528000,   call price is 3.307035,   put price is 49.907163
for k= 191.280000,   call price is 2.133637,   put price is 61.170917

 for stock 20 the value is

for k= 9669.935000,   call price is 9908.725349,   put price is 0.038803
for k= 11603.922000,   call price is 8024.209246,   put price is 1.759391
for k= 13537.909000,   call price is 6159.481827,   put price is 23.268662
for k= 15471.896000,   call price is 4389.097872,   put price is 139.121398
for k= 17405.883000,   call price is 2853.517805,   put price is 489.778022
for k= 19339.870000,   call price is 1680.287251,   put price is 1202.784159
for k= 21273.857000,   call price is 898.644656,   put price is 2307.378255
for k= 23207.844000,   call price is 440.533416,   put price is 3735.503706
for k= 25141.831000,   call price is 200.310482,   put price is 5381.517463
for k= 27075.818000,   call price is 85.512866,   put price is 7152.956537
for k= 29009.805000,   call price is 34.660367,   put price is 8988.340730
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Output:
Question 2:

The data is put in the folder named 'q2'.