程序代写代做 CS编程辅导

Portfolio hw



Please follow lems:

credit, when formulating optimization prob-

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- constraints to explain their meaning. • Clearly defin
- It is OK to leave a linear constraint in the form say $x_2 \geq 3(x_1 + x_4)$. You do not have to rearrange it to put all variables on one side.
- Please do not ma wheat is so cheap, we will not produce any of it, because ...". Such assumptions may be possible in some toy problems, but in general these will not work.

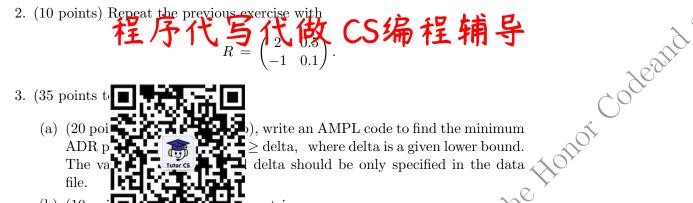
- Upload your written solution (the LP formulation written down on paper) on Gradescope susual.
- Create a folder with the name "HW6." Then add the following 4 files:
 - 1. portfoli
 - 2. portfolio.dat
 - 3. Q4b.mod
 - tutorcs.com/ 4. Q4d.mdd, Q41)

The file portfolio dat will be provided and you don't need to modify this data file for submission. The efficient method to continuously change the parameter from the AMPL console side is described in the Q3 (b) hint.

- Make sure your file and folder names are correct. Otherwise, we will not be able to run your code.
- Compress the folder into "HW6.zip" or "HW6.rar" and submit it to Sakai.
- pel Hill.Posti 1. (10 points) Given the return matrix

$$R = \begin{pmatrix} 2 & 0 \\ -1 & 0.1 \end{pmatrix}$$

and the probabilities $p_1 = 0.8$, $p_2 = 0.2$, compute without using any software the maximum expected return that we can get while the ADR is zero.



- 3. (35 points t
 - (a) (20 po file.

), write an AMPL code to find the minimum \geq delta, where delta is a given lower bound. delta should be only specified in the data on of the

(b) (10 pc

WeChat
$$\begin{pmatrix} 5.51 & 4.80 & 2.56 \\ -1.24 & 0.61 & 0.16 \\ 5.65 & t_1.50 & 0.50 \end{pmatrix}$$

and probabilities $p_i = 0.25$ for i = 1, 2, 3, 4, compute the efficient frontier and probabilities $p_i = 0.25$ for i = 1, 2, 3, 4, by increasing delta from 0 in increments of 0.2 Increase delta until the left probabilities $p_i = 0.25$ for i = 1, 2, 3, 4. LP problem is integrible. List in a table the pairs (delta, minimum ADR). (This matrix is scaled for convenience, so the actual values should be 0.551, 0.480, etc.)

Hint: this tank done very from software

- specify "delta" as a parameter. declare it in the model file.
- After solving the LP with AMPL, you can reset delta by typing,

- let delta := 0.4

fronti continue icom way you do not have to "reset data", etc.

- (c) (5 points) Write down the optimal investment x when delta is 0, when delta is 1, and when delta is 2. Which investment is more diversified, i.e., which is more evenly spread among the stocks?
- 4. (60 points total) (NB: this may look like an artificial problem. In fact, airlines pel Hill. Postif use such models to optimize money spent on fuel purchase).

You are planning to make a roadtrip from Chapel Hill to Austin, Texas. To make the route as scenic and fun as possible, you plan to stop in the following cities: Nashville, Memphis, Tulsa. And finally in Austin. You plan to purchase gas in the first three of these stops (and nowhere else).

So your trip will have 4 legs: leg 1 is from Chapel Hill to Nashville; leg 2 is from Nashville to Memphis; leg 3 is from Memphis to Tulsa; leg 4 is from Tulsa to Austin.

After consulting the map, we see that the gas consumption of your car is as follows:

Honoi Codeand • leg 1: 11 gallons · leg 2: 6锰炉代写代做 CS编程辅导

• leg 3: 9 gallons

• leg 4:

of gas, and you leave Chapel Hill with a full Your car's 1 tank. The as at the stops is given as Nashville: \$2.19; Memphis: \$

decide how much gas to buy at each stop to (a) (10 poi ou spend on gas.

- (b) (10 points) Write an AMPL code with ONLY a mod file, and solve it.
- (c) (15 points) We state a problem of this sort in general, as follows. We have n titles, the 1st city is Chapel Hill the nth city is Austin. The price of gas in onty is proper gallow. Full consumption on the leg from city i to city i+1 is f_i for $i=1,\ldots,n-1$. The capacity of your tank is C gallons, and you leave Chapel Hill with a full tank. Here n, p_i, f_i, C are all given costantonmen roiect Set up an LP to decide how much gas to but at each stop to minimize the total amount you spend on gas. Use these parameters.
- dat file.

 Ju should get the same rest.

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 And Hill. Posting and Park of the same rest. (d) (25 points) Write an AMPL code with a mod file and a dat file. The dat file should contain the data given above. The actual values of $h_i p_i$, etc

Solve it. Obviously you should get the same result that you got with only