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1  /*****
2  File name: cal_cov.cpp
3  Description: calculate covariance matrix
4  *****/
5
6  #include "cal_cov.h"
7
8  void cal_cov(double **covMatrix, double *meanMatrix, double **retMatrix, int
numberAssets, int numberReturns)
9  {
10     for(int i = 0; i < numberAssets; i++)
11     {
12         for(int j = 0; j < numberAssets; j++)
13         {
14             double cov = 0;
15             for(int k = 0; k < numberReturns; k++)
16                 cov += (retMatrix[i][k] - meanMatrix[i]) * (retMatrix[j][k] -
meanMatrix[j]) / (numberReturns - 1);
17             covMatrix[i][j] = cov;
18         }
19     }
20 }
21
22 void cal_cov(double **covMatrix, double *meanMatrix, double **retMatrix, int
numberAssets, int numberReturns, int startDay)
23 {
24     for(int i = 0; i < numberAssets; i++)
25     {
26         for(int j = 0; j < numberAssets; j++)
27         {
28             double cov = 0;
29             for(int k = startDay; k < startDay + numberReturns; k++)
30                 cov += (retMatrix[i][k] - meanMatrix[i]) * (retMatrix[j][k] -
meanMatrix[j]) / (numberReturns - 1);
31             covMatrix[i][j] = cov;
32         }
33     }
34 }
35

```