

Example of inclusion of a BLAS function

C++

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1 // Kompilieren mit g++ -std=c++11 blasTest.cpp -lgfortran -lblas
2 #include <iostream>
3 #include <algorithm>
4 void output(const double* M, const int m, const int n) {
5     for (int i(0); i < m; ++i) {
6         for (int j(0); j < n; ++j) {
7             std::cout << M[i*m+j] << " ";
8         }
9         std::cout << "\n";
10    }
11    return;
12 }
13 extern "C" void dgemm_(char* transA, char* transB, int* m, int* n, int* k,
14     double* alpha, double* A, int* lda,
15     double* B, int* ldb, double* beta,
16     double* C, int* ldc);
17 int main() {
18     double A[4];
19     A[0] = 1; A[1] = 0; A[2] = A[1]; A[3] = A[0];
20
21     double B[4];
22     B[0] = 1; B[1] = 2; B[2] = 3; B[3] = 4;
23
24     double C[4];
25
26     // BLAS OPTIONS
27     char transA('T'); // 'N': op(A) = A
28                       // 'T': op(A) = A**T
29                       // 'C': op(A) = A**T
30     char transB('T'); // same as above, just with B
31     int m(2); // #rows of op(A), C
32     int n(2); // #cols op(B), C
33     int k(2); // #cols op(A), #rows op(B)
34     double alpha(1); // scaling factor of (A * B)
35     double beta(1); // scaling factor of C
36     int lda(k); // leading dimension of A
37     int ldb(n);
38     int ldc(m);
39
40     // ATTENTION: BLAS IS COLUMN MAJOR
41     dgemm_(&transA, &transB, &m, &n, &k, &alpha, A, &lda, B, &ldb, &beta, C, &ldc);
42     // transpose C
43     std::swap(C[1], C[2]);
44     output(A, 2, 2);
45     std::cout << "\n*\n";
46     output(B, 2, 2);
47     std::cout << "\n=\n";
48     output(C, 2, 2);
49     return 0;
50 }
```