

```
1 using Matrix_0;
2
3 // 複數矩陣 A
4 double[,] Re1 = { {8, 7, 6}, {4, -5, 9}, {9, 0, 3} };
5 double[,] Cx1 = { {6, 1, -9}, {-4, 9, -1}, {12, 8, -8} };
6 CxMatrix A = new CxMatrix(Re1, Cx1);
7 Console.WriteLine("\n Matrix A :\n{0}\n", new PR(A));
8 /* 複數矩陣A
9 Matrix A :
10 8.00000 + 6.00000i, 7.00000 + 1.00000i, 6.00000 - 9.00000i
11 4.00000 - 4.00000i, -5.00000 + 9.00000i, 9.00000 - 1.00000i
12 9.00000 + 12.00000i, 0.00000 + 8.00000i, 3.00000 - 8.00000i
13 */
14
15
16 // 複數矩陣A的逆矩陣B
17 CxMatrix B = ~A;
18 Console.WriteLine("\n Matrix B = Ai \n{0}\n", new PR(B));
19 /*
20 Matrix B = Ai
21 0.02150 - 0.00001i, 0.01423 + 0.04576i, 0.00992 - 0.04156i
22 0.04278 + 0.06708i, -0.03746 - 0.02003i, -0.03442 - 0.05000i
23 0.07987 + 0.01292i, 0.04172 + 0.01695i, -0.05763 + 0.02312i
24 */
25
26
27 // 複數矩陣C = Id = A * Ai
28 CxMatrix C = A * B;
29 Console.WriteLine("\n Matrix C\n{0}\n", new PR(C));
30 /*
31 Matrix C
32 1.00000 + 0.00000i, 0.00000 + 0.00000i, 0.00000 + 0.00000i
33 0.00000 + 0.00000i, 1.00000 + 0.00000i, 0.00000 + 0.00000i
34 0.00000 + 0.00000i, 0.00000 + 0.00000i, 1.00000 + 0.00000i
35 */
36
37
38 // 將複數轉為實數矩陣 Id(Identity Matrix)
39 ReMatrix D = (ReMatrix)C;
40 Console.WriteLine("\n Matrix D :\n{0}\n", new PR(D));
41 /*
42 Matrix D :
43 1.00000 0.00000 0.00000
44 0.00000 1.00000 0.00000
45 0.00000 0.00000 1.00000
46 */
47
```

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48
49 // 對稱矩陣As的模態矩陣Q，則矩陣Q的逆矩陣Qi與轉置矩陣Qt相等。
50 double[,] As = { {3, -4, 9}, {-4, 6, -2}, {9, -2, 7} };
51 ReMatrix Q = (new EIG(As)).MatrixQ;
52 ReMatrix Qi = ~Q; //逆矩陣Qi
53 ReMatrix Qt = !Q; //轉置矩陣Qt
54 Console.WriteLine("\n 逆矩陣 Matrix Qi : \n{0}\n", new PR(Qi));
55 Console.WriteLine("\n 轉置矩陣 Matrix Qt : \n{0}\n", new PR(Qt));
56 /*
57 逆矩陣 Matrix Qi :
58      0.60499      -0.38472      0.69712
59      0.09218      0.90348      0.41860
60      0.79088      0.18899      -0.58206
61 轉置矩陣 Matrix Qt :
62      0.60499      -0.38472      0.69712
63      0.09218      0.90348      0.41860
64      0.79088      0.18899      -0.58206
65 */
66
```