```cpp
void InPhanTuTrenCot(int a[SIZE][SIZE], int n, int m, int Cot)
{
    printf("\n----------Phan tu tren cot: %d-------------\n", Cot);
    for (int i = 0; i < n; i++)
    {
        printf("%d \t", a[i][Cot]);
    }
}


void main()
{
    srand(unsigned int(time(NULL)));

    int a[SIZE][SIZE];
    int n = 0, m = 0;

    NhapDongCot(n, m);
    NhapMang(a, n, m);          // in các số trên
    XuatMang(a, n, m);          // đường chéo chính

    printf("\n\n");
    for (int i = 0; i < n; i++)
    {
        for (int j = 0; j < m; j++)
        {
            if (i == j)
            printf("%d \t", a[i][j]);
        }
    }
}
```

```
Microsoft Visual Studio Debug Console

Nhap so dong (n > 0): 4

----------Mang 2 chieu-------------
18      4       4       17
8       18      13      7
4       4       5       11
9       15      18      19


18      18      5       19
C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 11036) exited with code 0.
Press any key to close this window . . .
```

```cpp
128    void InPhanTuTrenCot(int a[SIZE][SIZE], int n, int m, int Cot)
129    {
130        printf("\n----------Phan tu tren cot: %d------------\n", Cot);
131        for (int i = 0; i < n; i++)
132        {
133            printf("%d \t", a[i][Cot]);
134        }
135    }
136
137
138    void main()
139    {
140        srand(unsigned int(time(NULL)));
141
142        int a[SIZE][SIZE];
143        int n = 0, m = 0;
144
145        NhapDongCot(n, m);
146        NhapMang(a, n, m);
147        XuatMang(a, n, m);
148
149        printf("\n\n");
150        for (int i = 0; i < n; i++)
151        {
152            for (int j = 0; j < m; j++)
153            {
154                if (i + j == n - 1)
155                printf("%d \t", a[i][j]);
156            }
157        }
158
159    }
160
```

```
Select Microsoft Visual Studio Debug Console

Nhap so dong (n > 0): 4

----------Mang 2 chieu-------------
19      4       5       4
8       15      15      6
3       13      20      8
6       11      7       12


4       15      13      6
C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 14384) exited with code 0.
Press any key to close this window . . .
```

int a[3][4]		0	1	2	3
int n = 3	0	1	2	3	4
int m = 4	1	5	6	7	8
	2	9	10	11	12
	3	13	14	15	16

	0	1	2	3
0	00	01	02	03
1	10	11	12	13
2	20	21	22	23
3	30	31	32	33

	0	1	2	3	4	5	6
0					*		
1				*	*	*	
2			*	*	*	*	*
3		*	*	*	*	*	*
4	*	*	*	*	*	*	*

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1																
2																
3	int a[3][4]			0	1	2	3			0	1	2	3	4	5	6
4	int n = 3		0	1	2	3	4		0					*		
5	int m = 4		1	5	6	7	8		1			*	*	*		
6			2	9	10	11	12		2			*	*	*	*	*
7			3	13	14	15	16		3		*	*	*	*	*	*
8									4	*	*	*	*	*	*	*
9				0	1	2	3									
10			0	00	01	02	03									
11			1	10	11	12	13									
12			2	20	21	22	23									
13			3	30	31	32	33									
14																
15																

int a[3][4]
int n = 3
int m = 4

	0	1	2	3
0	1	2	3	4
1	5	6	7	8
2	9	10	11	12
3	13	14	15	16

	0	1	2	3	4	5	6
0					*		
1				*	*	*	
2			*	*	*	*	*
3		*	*	*	*	*	*
4	*	*	*	*	*	*	*

	0	1	2	3
0	00	01	02	03
1	10	11	12	13
2	20	21	22	23
3	30	31	32	33

```cpp
128    void InPhanTuTrenCot(int a[SIZE][SIZE], int n, int m, int Cot)
129    {
130        printf("\n----------Phan tu tren cot: %d-------------\n", Cot);
131        for (int i = 0; i < n; i++)
132        {
133            printf("%d \t", a[i][Cot]);
134        }
135    }



138    void main()
139    {
140        srand(unsigned int(time(NULL)));
141
142        int a[SIZE][SIZE];
143        int n = 0, m = 0;
144
145        NhapDongCot(n, m);
146        NhapMang(a, n, m);
147        XuatMang(a, n, m);
148
149        printf("\n\n");
150        for (int i = 0; i < n; i++)
151        {
152            for (int j = i; j < m; j++)
153            {
154                printf("%d \t", a[i][j]);
155            }
156            printf("\n");
157        }
158
159    }
160
```

```
Microsoft Visual Studio Debug Console

Nhap so dong (n > 0): 4

----------Mang 2 chieu-------------
4       15      10      13
9       8       5       8
9       20      15      12
2       1       12      8


4       15      10      13
8       5       8
15      12
8

C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 15056) exited with code 0.
Press any key to close this window . . .
```

```cpp
140              srand(unsigned int(time(NULL)));
141
142          int a[SIZE][SIZE];
143          int n = 0, m = 0;
144
145          NhapDongCot(n, m);
146          NhapMang(a, n, m);
147          XuatMang(a, n, m);
148
149          printf("\n\n");
150          for (int i = 0; i < n; i++)
151          {
152              for (int j = 0; j < m; j++)
153              {
154                  if (j >= i)
155                      printf("%d \t", a[i][j]);
156                  else
157                      printf("   \t");
158              }
159              printf("\n");
160          }
161
162      }
163
```

```
Microsoft Visual Studio Debug Console

Nhap so dong (n > 0): 4

----------Mang 2 chieu-------------
13      5       17      9
2       14      13      11
14      20      9       11
6       2       6       14


13      5       17      9
        14      13      11
                9       11
                        14

C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 16508) exited with code 0.
Press any key to close this window . . .
```

```cpp
            srand(unsigned int(time(NULL)));

            int a[SIZE][SIZE];
            int n = 0, m = 0;

            NhapDongCot(n, m);
            NhapMang(a, n, m);
            XuatMang(a, n, m);

            printf("\n\n");
            for (int i = 0; i < n; i++)
            {
                for (int j = 0; j < m; j++)
                {
                    if (j >= i)
                        printf("%d \t", a[i][j]);
                    else
                        printf("   \t");
                }
                printf("\n");
            }
}
```

int a[3][4]
int n = 3
int m = 4

	0	1	2	3
0	1	2	3	4
1	5	6	7	8
2	9	10	11	12
3	13	14	15	16

	0	1	2	3
0	00	01	02	03
1	10	11	12	13
2	20	21	22	23
3	30	31	32	33

```cpp
140             srand(unsigned int(time(NULL)));
141
142             int a[SIZE][SIZE];
143             int n = 0, m = 0;
144
145             NhapDongCot(n, m);
146             NhapMang(a, n, m);
147             XuatMang(a, n, m);
148
149             printf("\n\n");
150             for (int i = 0; i < n; i++)
151             {
152                 for (int j = 0; j < m; j++)
153                 {
154                     if (j + i >= n - 1)
155                         printf("%d \t", a[i][j]);
156                     else
157                         printf("   \t");
158                 }
159                 printf("\n");
160             }
161
162     }
163
```

```
Nhap so dong (n > 0): 4

----------Mang 2 chieu-------------
17      3       9       10
11      10      9       3
20      17      1       9
16      4       1       6


                        10
                9       3
        17      1       9
16      4       1       6

C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 20688) exited with code 0.
Press any key to close this window . . .
```

	0	1	2	3
0	1	2	3	4
1	5	6	7	8
2	9	10	11	12
3	13	14	15	16

	0	1	2	3
0	00	01	02	03
1	10	11	12	13
2	20	21	22	23
3	30	31	32	33

```cpp
140            srand(unsigned int(time(NULL)));
141
142            int a[SIZE][SIZE];
143            int n = 0, m = 0;
144
145            NhapDongCot(n, m);
146            NhapMang(a, n, m);
147            XuatMang(a, n, m);
148
149            printf("\n\n");
150            for (int i = 0; i < n; i++)
151            {
152                for (int j = 0; j < m; j++)
153                {
154                    if (i == 0 || i == n - 1 || j == 0 || j == n - 1)
155                        printf("%d \t", a[i][j]);
156                }
157                printf("\n");
158            }
159
160      }
161
```

```
Microsoft Visual Studio Debug Console

Nhap so dong (n > 0): 4

----------Mang 2 chieu------------
11      15      16      6
5       6       8       16
16      2       17      15
6       4       16      12


11      15      16      6
5       16
16      15
6       4       16      12

C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 17060) exited with code 0.
Press any key to close this window . . .
```

16.- Xuất theo hình cho trước:

16.1.- In các giá trị các phần tử của ma trận theo thứ tự của đường chéo song song với đường chéo phụ của ma trận.

7.0	8.5	9.5	10
12	5.5	6.2	15
8.0	3.3	8.0	12
9.5	1.0	9.0	13

Ví dụ: Ma trận nhập vào:

Kết quả in ra: 7.0; 8.5;12; 9.5; 5.5; 8.0; 10; 6.2; 3.3; 9.5; 15; 8.0; 1.0; 12; 9; 13;

```cpp
123                  Max = a[Dong][j];
124          }
125          return Max;
126      }
127
128      void InPhanTuTrenCot(int a[SIZE][SIZE], int n, int m, int Cot)
129      {
130          printf("\n---------Phan tu tren cot: %d------------\n", Cot);
131          for (int i = 0; i < n; i++)
132          {
133              printf("%d \t", a[i][Cot]);
134          }
135      }
136
137      void XuatMang1Chieu(int a[SIZE], int n)
138      {
139          printf("\nPhan tu trong mang:\n");
140          for (int i = 0; i < n; i++)
141          {
142              // printf("\na[%d] = %d", i, a[i]);
143              printf("%d \t", a[i]);
144          }
145      }
146
147
148      void main()
149      {
150          srand(unsigned int(time(NULL)));
151
152          int a[SIZE][SIZE];
153          int n = 0, m = 0;
154
155          NhapDongCot(n, m);
156          NhapMang(a, n, m);
157          XuatMang(a, n, m);
```

```cpp
144     }
145
146
147     □void main()
148     {
149         srand(unsigned int(time(NULL)));
150
151         int a[SIZE][SIZE];
152         int n = 0, m = 0;
153
154         NhapDongCot(n, m);
155         NhapMang(a, n, m);
156         XuatMang(a, n, m);
157
158         printf("\n\n");
159         int b[SIZE], k = 0;
160
161         printf("\n---------Mang 2 chieu -> Mang 1 chieu------------\n");
162         for (int i = 0; i < n; i++)
163         {
164             for (int j = 0; j < m; j++)
165             {
166                 b[k] = a[i][j];
167                 k++;
168             }
169         }
170         XuatMang1Chieu(b, k);
171     }
172
```

```
Nhap so dong (n > 0): 4

----------Mang 2 chieu-------------
19       5        3        14
4        8        9        12
3        3        17       9
11       14       7        12




----------Mang 2 chieu -> Mang 1 chieu-------------

Phan tu trong mang:
19     5       3       14      4       8       9       12      3       3       17      9       11      14      7       1
2
C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 18468) exited with code 0.
Press any key to close this window . . .
```

SplitString.cpp   Mang2Chieu.cpp* ⇄ × Mang1Chieu.cpp   CauTrucLap.cpp   CauTrucReNhanh.cpp   You are screen sharing   ■ Stop Share

LapTrinhBanBan   ▼   (Global Scope)   ▼ ◉ main()

```cpp
135      }
136
137    □void XuatMang1Chieu(int a[SIZE], int n)
138      {
139          printf("\nPhan tu trong mang:\n");
140          for (int i = 0; i < n; i++)
141          {
142              printf("%d \t", a[i]);
143          }
144      }
145
146      void Swap(int& a, int& b)
147      {
148          int temp = a;
149          a = b;
150          b = temp;
151      }
152
153      void InterchangeSort(int a[SIZE], int n)
154      {
155          for (int i = 0; i < n - 1; i++)
156          {
157              for (int j = i + 1; j < n; j++)
158              {
159                  if (a[i] > a[j])
160                  {
161                      Swap(a[i], a[j]);
162                  }
163              }
164
165          }
166      }
167
168    □void main()
169      {
```

```cpp
171
172            int a[SIZE][SIZE];
173            int n = 0, m = 0;
174
175            NhapDongCot(n, m);
176            NhapMang(a, n, m);
177            XuatMang(a, n, m);
178
179            printf("\n\n");
180            int b[SIZE], k = 0;
181
182            printf("\n----------Mang 2 chieu -> Mang 1 chieu------------\n");
183            for (int i = 0; i < n; i++)
184            {
185                for (int j = 0; j < m; j++)
186                {
187                    b[k] = a[i][j];
188                    k++;
189                }
190            }
191            XuatMang1Chieu(b, k);
192            InterchangeSort(b, k);
193        }
194
```

```cpp
171
172            int a[SIZE][SIZE];
173            int n = 0, m = 0;
174
175            NhapDongCot(n, m);
176            NhapMang(a, n, m);
177            XuatMang(a, n, m);
178
179            printf("\n\n");
180            int b[SIZE], k = 0;
181
182            printf("\n----------Mang 2 chieu -> Mang 1 chieu------------\n");
183            for (int i = 0; i < n; i++)
184            {
185                for (int j = 0; j < m; j++)
186                {
187                    b[k] = a[i][j];
188                    k++;
189                }
190            }
191            XuatMang1Chieu(b, k);
192            InterchangeSort(b, k);
193            XuatMang1Chieu(b, k);
194        }
```

Output

```
Nhap so dong (n > 0): 3

----------Mang 2 chieu-------------
12      19      8
12      15      19
7       2       18




----------Mang 2 chieu -> Mang 1 chieu-------------

Phan tu trong mang:
12      19      8       12      15      19      7       2       18
Phan tu trong mang:
2       7       8       12      12      15      18      19      19
C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 7936) exited with code 0.
Press any key to close this window . . .
```

```cpp
        XuatMang(a, n, m);

        printf("\n\n");
        int b[SIZE], k = 0;

        printf("\n---------Mang 2 chieu -> Mang 1 chieu------------\n");
        for (int i = 0; i < n; i++)
        {
            for (int j = 0; j < m; j++)
            {
                b[k] = a[i][j];
                k++;
            }
        }

        XuatMang1Chieu(b, k);
        InterchangeSort(b, k);
        XuatMang1Chieu(b, k);

        printf("\n---------Mang 1 chieu -> Mang 2 chieu------------\n");
        for (int i = 0; i < n; i++)
        {
            for (int j = 0; j < m; j++)
            {
                a[i][j] = b[k];
                k++;
            }
        }
    }
```

```cpp
174
175            NhapDongCot(n, m);
176            NhapMang(a, n, m);
177            XuatMang(a, n, m);
178
179            printf("\n\n");
180            int b[SIZE], k = 0;
181
182            printf("\n----------Mang 2 chieu -> Mang 1 chieu------------\n");
183            for (int i = 0; i < n; i++)
184            {
185                for (int j = 0; j < m; j++)
186                {
187                    b[k] = a[i][j];
188                    k++;
189                }
190            }
191
192            XuatMang1Chieu(b, k);
193            InterchangeSort(b, k);
194            XuatMang1Chieu(b, k);
195
196            printf("\n----------Mang 1 chieu -> Mang 2 chieu------------\n");
197            k = 0;
198            for (int i = 0; i < n; i++)
199            {
200                for (int j = 0; j < m; j++)
201                {
202                    a[i][j] = b[k];
203                    k++;
204                }
205            }
206    }
207
```

```cpp
183            for (int i = 0; i < n; i++)
184            {
185                for (int j = 0; j < m; j++)
186                {
187                    b[k] = a[i][j];
188                    k++;
189                }
190            }
191
192            XuatMang1Chieu(b, k);
193            InterchangeSort(b, k);
194            XuatMang1Chieu(b, k);
195
196            printf("\n----------Mang 1 chieu -> Mang 2 chieu------------\n");
197            k = 0;
198            for (int i = 0; i < n; i++)
199            {
200                for (int j = 0; j < m; j++)
201                {
202                    a[i][j] = b[k];
203                    k++;
204                }
205            }
206
207            XuatMang(a, n, m);
208        }
209
```
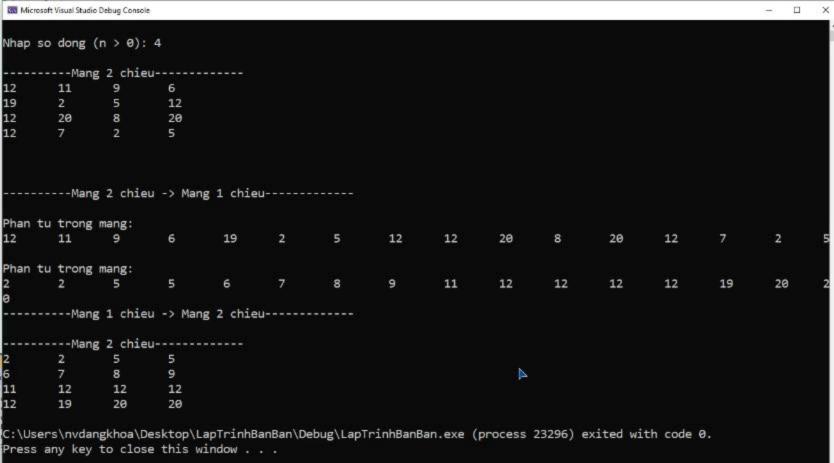
```
Microsoft Visual Studio Debug Console

Nhap so dong (n > 0): 3

----------Mang 2 chieu--------------
3        19       16
13       14       11
14       14       17



----------Mang 2 chieu -> Mang 1 chieu--------------

Phan tu trong mang:
3        19       16       13       14       11       14       14       17
Phan tu trong mang:
3        11       13       14       14       14       16       17       19
----------Mang 1 chieu -> Mang 2 chieu--------------

----------Mang 2 chieu--------------
3        11       13
14       14       14
16       17       19

C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 20560) exited with code 0.
Press any key to close this window . . .
```

```cpp
162                     }
163                 }
164
165             }
166     }
167
168   □void DoMang1ChieuQua1Chieu(int a[SIZE][SIZE], int n, int m, int b[SIZE], int &k)
169     {
170         printf("\n----------Mang 2 chieu -> Mang 1 chieu------------\n");
171   □    for (int i = 0; i < n; i++)
172         {
173   □        for (int j = 0; j < m; j++)
174             {
175                 b[k] = a[i][j];
176                 k++;
177             }
178         }
179     }
180
181   □void main()
182     {
183         srand(unsigned int(time(NULL)));
184
185         int a[SIZE][SIZE];
186         int n = 0, m = 0;
187
188         NhapDongCot(n, m);
189         NhapMang(a, n, m);
190         XuatMang(a, n, m);
191
192         printf("\n\n");
193         int b[SIZE], k = 0;
194
195
196
```

143 %   ▾   ● 0   ▲ 2   ← →

```cpp
177                 }
178             }
179         }
180
181     □void main()
182      {
183             srand(unsigned int(time(NULL)));
184
185             int a[SIZE][SIZE];
186             int n = 0, m = 0;
187
188             NhapDongCot(n, m);
189             NhapMang(a, n, m);
190             XuatMang(a, n, m);
191
192             printf("\n\n");
193             int b[SIZE], k = 0;
194
195             DoMang1ChieuQua1Chieu(a, n, m, b, k);
196             XuatMang1Chieu(b, k);
197             InterchangeSort(b, k);
198             XuatMang1Chieu(b, k);
199
200             printf("\n----------Mang 1 chieu -> Mang 2 chieu-------------\n");
201             k = 0;
202      □      for (int i = 0; i < n; i++)
203             {
204      □          for (int j = 0; j < m; j++)
205                 {
206                     a[i][j] = b[k];
207                     k++;
208                 }
209             }
210
211             XuatMang(a, n, m);
```

143 % ▾   ● 0   ▲ 2   ← →

```cpp
177                 }
178             }
179     }
180
181    void DoMang1ChieuQua2Chieu(int a[SIZE][SIZE], int n, int m, int b[SIZE], int k)
182    {
183        printf("\n----------Mang 1 chieu -> Mang 2 chieu------------\n");
184        k = 0;
185        for (int i = 0; i < n; i++)
186        {
187            for (int j = 0; j < m; j++)
188            {
189                a[i][j] = b[k];
190                k++;
191            }
192        }
193    }
194
195    void main()
196    {
197        srand(unsigned int(time(NULL)));
198
199        int a[SIZE][SIZE];
200        int n = 0, m = 0;
201
202        NhapDongCot(n, m);
203        NhapMang(a, n, m);
204        XuatMang(a, n, m);
205
206        printf("\n\n");
207        int b[SIZE], k = 0;
208
209        DoMang2ChieuQua1Chieu(a, n, m, b, k);
210        XuatMang1Chieu(b, k);
211        InterchangeSort(b, k);
```

143% ▾   ● 0   ▲ 2   ← →

```cpp
            {
                for (int j = 0; j < m; j++)
                {
                    a[i][j] = b[k];
                    k++;
                }
            }
        }

        void main()
        {
            srand(unsigned int(time(NULL)));

            int a[SIZE][SIZE];
            int n = 0, m = 0;

            NhapDongCot(n, m);
            NhapMang(a, n, m);
            XuatMang(a, n, m);

            printf("\n\n");
            int b[SIZE], k = 0;

            DoMang2ChieuQua1Chieu(a, n, m, b, k);
            XuatMang1Chieu(b, k);
            InterchangeSort(b, k);
            XuatMang1Chieu(b, k);

            DoMang1ChieuQua2Chieu(a, n, m, b, k);
            XuatMang(a, n, m);
        }
```

```
Microsoft Visual Studio Debug Console                                                    —   □   ✕

Nhap so dong (n > 0): 4

----------Mang 2 chieu-------------
12      11      9       6
19      2       5       12
12      20      8       20
12      7       2       5



----------Mang 2 chieu -> Mang 1 chieu--------------

Phan tu trong mang:
12      11      9       6       19      2       5       12      12      20      8       20      12      7       2       5

Phan tu trong mang:
2       2       5       5       6       7       8       9       11      12      12      12      12      19      20      2
0
----------Mang 1 chieu -> Mang 2 chieu--------------
----------Mang 2 chieu-------------
2       2       5       5
6       7       8       9
11      12      12      12
12      19      20      20

C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 23296) exited with code 0.
Press any key to close this window . . .
```

```cpp
        }
    }

    void main()
    {
        srand(unsigned int(time(NULL)));

        int a[SIZE][SIZE];
        int n = 0, m = 0;

        NhapDongCot(n, m);
        NhapMang(a, n, m);
        XuatMang(a, n, m);

        printf("\n\n");
        int b[SIZE], k = 0;

        DoMang2ChieuQua1Chieu(a, n, m, b, k);
        XuatMang1Chieu(b, k);
        InterchangeSort(b, k);
        XuatMang1Chieu(b, k);

        DoMang1ChieuQua2Chieu(a, n, m, b, k);
        XuatMang(a, n, m);
    }
```

```cpp
int TimMaxDong(int a[SIZE][SIZE], int n, int m, int Dong)
{
    int Max = a[Dong][0];
    for (int j = 1; j < m; j++)
    {
        if (Max < a[Dong][j])
            Max = a[Dong][j];
    }
    return Max;
}
```

```c
int TimMinCot(int a[SIZE][SIZE], int n, int m, int Cot)
{
    int Min = a[Cot][0];
    for (int i = 1; i < n; i++)
    {
        if (a[i][Cot] < Min)
            Min = a[i][Cot];
    }
    return Min;
}
```

72.- (*) Đếm số lượng giá trị "Hoàng Hậu" trên ma trận. Một phần tử được gọi là Hoàng Hậu khi nó lớn nhất trên dòng, trên cột và hai đường chéo đi qua nó.

73.- (*) Đếm số lượng giá trị "Yên Ngựa" trên ma trận. Một phần tử được gọi là Yên Ngựa khi nó lớn nhất trên dòng và nhỏ nhất trên cột.

```cpp
210            int a[SIZE][SIZE];
211            int n = 0, m = 0;
212
213            NhapDongCot(n, m);
214            NhapMang(a, n, m);
215            XuatMang(a, n, m);
216
217            printf("\n\n");
218
219            // Phần tử yên ngựa
220
221            printf("\n----------------------\n");
222            for (int i = 0; i < n; i++)
223            {
224                for (int j = 0; j < m; j++)
225                {
226                    int Dong = i, Cot = j;
227                    int MaxDong = TimMaxDong(a, n, m, Dong);
228                    int MinCot = TimMinCot(a, n, m, Cot);
229
230                    if (a[i][j] == MaxDong && a[i][j] == MinCot)
231                        printf("\nPhan tu yen ngua: a[%d][%d] = %d", i, j, a[i][j]);
232                }
233                printf("\n");
234            }
235
236        }
237
```

```cpp
int TimMaxDuongCheoDauSac(int a[SIZE][SIZE], int n, int m, int Tong)
{
    int Max = -1;
    for (int i = 0; i < n; i++)
    {
        for (int j = 0; j < m; j++)
        {
            if (i + j == Tong)
            {
                if (a[i][j] > Max)
                    Max = a[i][j];
            }
        }
    }
    return Max;
}

int TimMaxDuongCheoDauHuyen(int a[SIZE][SIZE], int n, int m, int Hieu)
{
    int Max = -1;
    for (int i = 0; i < n; i++)
    {
        for (int j = 0; j < m; j++)
        {
            if (i - j == Hieu)
            {
                if (a[i][j] > Max)
                    Max = a[i][j];
            }
        }
    }
}

void main()
```

```cpp
214                     {
215                         if (a[i][j] > Max)
216                             Max = a[i][j];
217                     }
218                 }
219             }
220             return Max;
221         }
222
223         int TimMaxDuongCheoDauHuyen(int a[SIZE][SIZE], int n, int m, int Hieu)
224         {
225             int Max = -1;
226             for (int i = 0; i < n; i++)
227             {
228                 for (int j = 0; j < m; j++)
229                 {
230                     if (i - j == Hieu)
231                     {
232                         if (a[i][j] > Max)
233                             Max = a[i][j];
234                     }
235                 }
236             }
237             return Max;
238         }
239
240         void main()
241         {
242             srand(unsigned int(time(NULL)));
243
244             int a[SIZE][SIZE];
245             int n = 0, m = 0;
246
247             NhapDongCot(n, m);
248             NhapMang(a, n, m);
```

```cpp
115        }
116
117    int TimMaxDong(int a[SIZE][SIZE], int n, int m, int Dong)
118    {
119        int Max = a[Dong][0];
120        for (int j = 1; j < m; j++)
121        {
122            if (Max < a[Dong][j])
123                Max = a[Dong][j];
124        }
125        return Max;
126    }
127
128    int TimMinCot(int a[SIZE][SIZE], int n, int m, int Cot)
129    {
130        int Min = a[Cot][0];
131        for (int i = 1; i < n; i++)
132        {
133            if (a[i][Cot] < Min)
134                Min = a[i][Cot];
135        }
136        return Min;
137    }
138
139    void InPhanTuTrenCot(int a[SIZE][SIZE], int n, int m, int Cot)
140    {
141        printf("\n----------Phan tu tren cot: %d-------------\n", Cot);
142        for (int i = 0; i < n; i++)
143        {
144            printf("%d \t", a[i][Cot]);
145        }
146    }
147
148    void XuatMang1Chieu(int a[SIZE], int n)
149    {
```
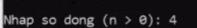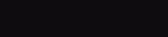
```cpp
118     {
119         int Max = a[Dong][0];
120         for (int j = 1; j < m; j++)
121         {
122             if (Max < a[Dong][j])
123                 Max = a[Dong][j];
124         }
125         return Max;
126     }
127
128     int TimMaxCot(int a[SIZE][SIZE], int n, int m, int Cot)
129     {
130         int Max = a[Cot][0];
131         for (int i = 1; i < n; i++)
132         {
133             if (a[i][Cot] > Max)
134                 Max = a[i][Cot];
135         }
136         return Max;
137     }
138
139     int TimMinCot(int a[SIZE][SIZE], int n, int m, int Cot)
140     {
141         int Min = a[Cot][0];
142         for (int i = 1; i < n; i++)
143         {
144             if (a[i][Cot] < Min)
145                 Min = a[i][Cot];
146         }
147         return Min;
148     }
149
150     void InPhanTuTrenCot(int a[SIZE][SIZE], int n, int m, int Cot)
151     {
152         printf("\n----------Phan tu tren cot: %d------------\n", Cot);
```

```cpp
256          int n = 0, m = 0;
257
258          NhapDongCot(n, m);
259          NhapMang(a, n, m);
260          XuatMang(a, n, m);
261
262          printf("\n\n");
263
264          // Phần tử hoàng hậu
265
266          printf("\n----------------------\n");
267          for (int i = 0; i < n; i++)
268          {
269              for (int j = 0; j < m; j++)
270              {
271                  int Dong = i, Cot = j;
272                  int MaxDong = TimMaxDong(a, n, m, Dong);
273                  int MaxCot = TimMaxCot(a, n, m, Cot);
274                  int MaxDauHuyen = TimMaxDuongCheoDauHuyen(a, n, m, Dong - Cot);
275                  int MaxDauSac = TimMaxDuongCheoDauSac(a, n, m, Dong + Cot);
276
277                  if (a[i][j] == MaxDong && a[i][j] == MaxCot && MaxDauHuyen == a[i][j] && MaxDauSac == a[i][j])
278                      printf("\nPhan tu hoang hau: a[%d][%d] = %d", i, j, a[i][j]);
279              }
280              printf("\n");
281          }
282
283      }
284
```

```
Microsoft Visual Studio Debug Console

Nhap so dong (n > 0): 4

----------Mang 2 chieu-------------
8        8        3        5
5        12       17       4
20       10       17       12
12       18       14       15



-----------------------



Phan tu hoang hau: a[2][0] = 20


C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 14916) exited with code 0.
Press any key to close this window . . .
```

```
Select Microsoft Visual Studio Debug Console

Nhap so dong (n > 0): 4

----------Mang 2 chieu------------
13      8       19      11
8       3       10      15
12      13      18      13
18      5       5       9


----------------------



Phan tu hoang hau: a[2][2] = 18

Phan tu hoang hau: a[3][0] = 18

C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 23412) exited with code 0.
Press any key to close this window . . .
```

```cpp
250
251     void main()
252     {
253         srand(unsigned int(time(NULL)));
254
255         int a[SIZE][SIZE];
256         int n = 0, m = 0;
257
258         NhapDongCot(n, m);
259         NhapMang(a, n, m);
260         XuatMang(a, n, m);
261
262         printf("\n\n");
263
264         // Phần tử cực đại
265
266         printf("\n----------------------\n");
267         for (int i = 0; i < n; i++)
268         {
269             for (int j = 0; j < m; j++)
270             {
271                 int Dong = i, Cot = j;
272
273                 int DongBatDau = Dong - 1;
274                 int DongKetThuc = Dong + 1;
275                 int CotBatDau = Cot - 1;
276                 int CotKetThuc = Cot + 1;
277
278
279                 printf("\nPhan tu hoang hau: a[%d][%d] = %d", i, j, a[i][j]);
280             }
281             printf("\n");
282         }
283
284     }
```

```cpp
        printf("\n\n");


        // Phần tử cực đại

        printf("\n-------------------------\n");
        for (int i = 0; i < n; i++)
        {
            for (int j = 0; j < m; j++)
            {
                int Dong = i, Cot = j;

                int DongBatDau = Dong - 1;
                int DongKetThuc = Dong + 1;
                int CotBatDau = Cot - 1;
                int CotKetThuc = Cot + 1;

                if (DongBatDau < 0) DongBatDau = 0;
                if (DongKetThuc > n - 1) DongKetThuc = n - 1;
                if (CotBatDau < 0) CotBatDau = 0;
                if (CotKetThuc > n - 1) CotKetThuc = n - 1;

                int Max = a[Dong][Cot];

                for (int u = DongBatDau; u <= DongKetThuc; u++)
                {

                }

                printf("\nPhan tu hoang hau: a[%d][%d] = %d", i, j, a[i][j]);
            }
            printf("\n");
        }

    }
```

```cpp
265
266        printf("\n----------------------\n");
267        for (int i = 0; i < n; i++)
268        {
269            for (int j = 0; j < m; j++)
270            {
271                int Dong = i, Cot = j;
272
273                int DongBatDau = Dong - 1;
274                int DongKetThuc = Dong + 1;
275                int CotBatDau = Cot - 1;
276                int CotKetThuc = Cot + 1;
277
278                if (DongBatDau < 0) DongBatDau = 0;
279                if (DongKetThuc > n - 1) DongKetThuc = n - 1;
280                if (CotBatDau < 0) CotBatDau = 0;
281                if (CotKetThuc > n - 1) CotKetThuc = n - 1;
282
283                int Max = a[Dong][Cot];
284
285                for (int u = DongBatDau; u <= DongKetThuc; u++)
286                {
287                    for (int v = CotBatDau; v <= CotKetThuc; v++)
288                    {
289                        if (a[u][v] > Max)
290                            Max = a[u][v];
291                    }
292                }
293
294                if (Max == a[i][j])
295                    printf("\nPhan tu cuc dai: a[%d][%d] = %d", i, j, a[i][j]);
296            }
297            printf("\n");
298        }
299
```
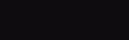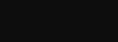
```cpp
            {
                for (int j = 0; j < m; j++)
                {
                    int Dong = i, Cot = j;

                    int DongBatDau = Dong - 1;
                    int DongKetThuc = Dong + 1;
                    int CotBatDau = Cot - 1;
                    int CotKetThuc = Cot + 1;

                    if (DongBatDau < 0) DongBatDau = 0;
                    if (DongKetThuc > n - 1) DongKetThuc = n - 1;
                    if (CotBatDau < 0) CotBatDau = 0;
                    if (CotKetThuc > n - 1) CotKetThuc = n - 1;

                    int Max = a[Dong][Cot];

                    for (int u = DongBatDau; u <= DongKetThuc; u++)
                    {
                        for (int v = CotBatDau; v <= CotKetThuc; v++)
                        {
                            if (a[u][v] > Max)
                                Max = a[u][v];
                        }
                    }

                    if (Max == a[i][j])
                        printf("\nPhan tu cuc dai: a[%d][%d] = %d", i, j, a[i][j]);
                }
                printf("\n");
            }

    }
```

```
Nhap so dong (n > 0): 4

----------Mang 2 chieu-------------
9        5        5        12
15       14       7        16
2        12       1        14
10       8        1        18



-----------------------


Phan tu cuc dai: a[1][0] = 15
Phan tu cuc dai: a[1][3] = 16


Phan tu cuc dai: a[3][3] = 18

C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 23504) exited with code 0.
Press any key to close this window . . .
```
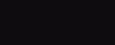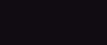
```cpp
        int n = 0, m = 0;

        NhapDongCot(n, m);
        NhapMang(a, n, m);
        XuatMang(a, n, m);

        printf("\n\n");

        // Phần tử phân biệt

        int b[SIZE], k = 0;

        printf("\n-----------------------\n");
        for (int i = 0; i < n; i++)
        {
            for (int j = 0; j < m; j++)
            {
                b[k] = a[i][j];
                k++;
            }
            printf("\n");
        }

    }
```

```cpp
241                    if (i - j == Hieu)
242                    {
243                        if (a[i][j] > Max)
244                            Max = a[i][j];
245                    }
246                }
247            }
248            return Max;
249        }
250
251    int KiemTraTonTaiTrongMang(int b[SIZE], int k, int x)
252    {
253        for (int i = 0; i < k; i++)
254        {
255            if (b[i] == x)
256                return 1;
257        }
258        return 0;
259    }
260
261    void main()
262    {
263        srand(unsigned int(time(NULL)));
264
265        int a[SIZE][SIZE];
266        int n = 0, m = 0;
267
268        NhapDongCot(n, m);
269        NhapMang(a, n, m);
270        XuatMang(a, n, m);
271
272        printf("\n\n");
273
274        // Phần tử phân biệt
275
```

```cpp
            int a[SIZE][SIZE];
            int n = 0, m = 0;

            NhapDongCot(n, m);
            NhapMang(a, n, m);
            XuatMang(a, n, m);

            printf("\n\n");


            // Phần tử phân biệt

            int b[SIZE], k = 0;

            printf("\n----------------------\n");
            for (int i = 0; i < n; i++)
            {
                for (int j = 0; j < m; j++)
                {
                    if (KiemTraTonTaiTrongMang(b, k, a[i][j]) == 0)
                    {
                        b[k] = a[i][j];
                        k++;
                    }
                }
                printf("\n");
            }

            printf("\nCo %d gia tri phan biet", k);
            XuatMang1Chieu(b, k);

    }
```

Nhap so dong (n > 0): 4

----------Mang 2 chieu------------
9   8   1   16
6   18   12   9
19   4   7   9
13   18   11   9

Co 12 gia tri phan biet
Phan tu trong mang:
9   8   1   16   6   18   12   19   4   7   13   11
C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 17376) exited with code 0.
Press any key to close this window . . .

```cpp
        int a[SIZE][SIZE];
        int n = 0, m = 0;

        NhapDongCot(n, m);
        NhapMang(a, n, m);
        XuatMang(a, n, m);

        printf("\n\n");

        // Phần tử phân biệt

        int b[SIZE], k = 0;

        printf("\n-----------------------\n");
        for (int i = 0; i < n; i++)
        {
            for (int j = 0; j < m; j++)
            {
                if (KiemTraTonTaiTrongMang(b, k, a[i][j]) == 0)
                {
                    b[k] = a[i][j];
                    k++;
                }
            }
            printf("\n");
        }

        printf("\nCo %d gia tri phan biet", k);
        XuatMang1Chieu(b, k);

    }
```

```
Nhap so dong (n > 0): 4

---------Mang 2 chieu-------------
4        19      2       4
17       9       9       14
3        10      17      6
20       1       3       14




-----------------------



Co 11 gia tri phan biet
Phan tu trong mang:
4       19      2       17      9       14      3       10      6       20      1
C:\Users\nvdangkhoa\Desktop\LapTrinhBanBan\Debug\LapTrinhBanBan.exe (process 20148) exited with code 0.
Press any key to close this window . . .
```