

MineSweeper.cpp

Week5_Homework

(Global Scope)

getBombCount()

C:\Users\User\source\repos\Week5_Homework\Week5_Homework.exe

<Mine Sweeper>
매설할 총 지뢰의 개수 입력 :

```
1  #pragma once
2  #include <stdio.h>
3  #include <stdlib.h>
4  #include <string.h>
5  #include <conio.h>
6  #include <memory.h>
7  #include <time.h>
8  #include <ctype.h>
9  extern void playMinesweeper(int nBomb = 13);
10
11 #define DIM 9
12
13 enum LabelType { Empty = 0, Bomb = 9 };
14 enum MaskType { Hide = 0, Open, Flag };
15 static int MineMapMask[DIM][DIM];
16 static int MineMapLabel[DIM][DIM];
17 static int nx = DIM, ny = DIM;
18 static int nBomb = DIM;
19
20 inline int& mask(int x, int y) { return MineMapMask[y][x]; }
21 inline int& label(int x, int y) { return MineMapLabel[y][x]; }
22 inline bool isValid(int x, int y) { return (x >= 0 && x < nx && y >= 0 && y < ny); }
23 inline bool isBomb(int x, int y) { return isValid(x, y) && label(x, y) == Bomb; }
24 inline bool isEmpty(int x, int y) { return isValid(x, y) && label(x, y) == Empty; }
25
26 static void dig(int x, int y)
27 {
28     if (isValid(x, y) && mask(x, y) != Open)
29     {
30         mask(x, y) = Open;
31         if (label(x, y) == 0)
32         {
33             dig(x - 1, y - 1);
34             dig(x - 1, y);
35             dig(x - 1, y + 1);
36         }
37     }
38 }
39
40 static void mark(int x, int y)
41 {
42     if (isValid(x, y) && mask(x, y) == Hide) mask(x, y) = Flag;
43 }
44
45 static int getBombCount()
46 {
47     int count = 0;
48     for (int y = 0; y < ny; y++)
49         for (int x = 0; x < nx; x++)
50             if (mask(x, y) == Flag) count++;
51     return count;
52 }
53
54 static void print()
55 {
56     system("cls");
57     printf(" 발견 : %d 전체 : %d\n", getBombCount(), nBomb);
58     printf("   ①②③④⑤⑥⑦⑧⑨\n");
59     for (int y = 0; y < ny; y++)
60     {
61         printf("%2c ", 'A' + y);
62         for (int x = 0; x < nx; x++)
63         {
64             if (mask(x, y) == Hide) printf("□");
65             else if (mask(x, y) == Flag) printf("*");
66         }
67         printf("\n");
68     }
69 }
```

79 %

No issues found

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발견 : 0 전체 : 13
①②③④⑤⑥⑦⑧⑨
A □□□□□□□□
B □□□□□□□□
C □□□□□□□□
D □□□□□□□□
E □□□□□□□□
F □□□□□□□□
G □□□□□□□□
H □□□□□□□□
I □□□□□□□□

지뢰(P) 행(A-I) 열(0-9)
입력 -->

```
36     dig(x, y - 1);
37     dig(x, y + 1);
38     dig(x + 1, y - 1);
39     dig(x + 1, y);
40     dig(x + 1, y + 1);
41 }
42
43 static void mark(int x, int y)
44 {
45     if (isValid(x, y) && mask(x, y) == Hide) mask(x, y) = Flag;
46 }
47
48 static int getBombCount()
49 {
50     int count = 0;
51     for (int y = 0; y < ny; y++)
52         for (int x = 0; x < nx; x++)
53             if (mask(x, y) == Flag) count++;
54     return count;
55 }
56
57 static void print()
58 {
59     system("cls");
60     printf(" 발견 : %d 전체 : %d\n", getBombCount(), nBomb);
61     printf("   ①②③④⑤⑥⑦⑧⑨\n");
62     for (int y = 0; y < ny; y++)
63     {
64         printf("%2c ", 'A' + y);
65         for (int x = 0; x < nx; x++)
66         {
67             if (mask(x, y) == Hide) printf("□");
68             else if (mask(x, y) == Flag) printf("*");
69         }
70         printf("\n");
71     }
72 }
```

79 %

No issues found

MineSweeper.cpp

Week5_Homework

(Global Scope)

getBombCount()

Microsoft Visual Studio Debug Console

발견 : 0 전체 : 13
①②③④⑤⑥⑦⑧⑨
A 1□□□3□□□
B 12□□□□□□
C □□11233□□
D □□11※□□
E □□113□□
F □□11□□□
G □212□□□
H 112□□□
I 2□□□2□□□

실패 : 지뢰 폭발!!!

C:\Users\User\source\repos\Week5_Homework\Week5_Homework.exe (process 252)
To automatically close the console when debugging stops, enable Tools->Options->Debu
le when debugging stops.
Press any key to close this window . . .

```
71     else
72     {
73         if (isBomb(x, y)) printf("※");
74         else if (isEmpty(x, y)) printf(" ");
75         else printf("%2d", label(x, y));
76     }
77 }
78
79 static void countNbrBombs(int x, int y)
80 {
81     int count = 0;
82     for (int yy = y - 1; yy <= y + 1; yy++)
83         for (int xx = x - 1; xx <= x + 1; xx++)
84             if (isValid(xx, yy) && label(xx, yy) == Bomb) count++;
85     return count;
86 }
87
88 static void init(int total = 9)
89 {
90     srand((unsigned int)time(NULL));
91     for (int y = 0; y < ny; y++)
92         for (int x = 0; x < nx; x++)
93         {
94             mask(x, y) = Hide;
95             label(x, y) = 0;
96         }
97     nBomb = total;
98     for (int i = 0; i < nBomb; i++)
99     {
100         int x, y;
101         do
102         {
103             x = rand() % nx;
104             y = rand() % ny;
105         } while (mask(x, y) != Hide);
106         label(x, y) = Bomb;
107     }
108 }
```

79 %

No issues found

MineSweeper.cpp Week5_Homework (Global Scope) countNbrBombs(int x, int y)

```
106     x = rand() % nx;
107     y = rand() % ny;
108     while (label(x, y) != Empty);
109     label(x, y) = Bomb;
110 }
111 for (int y = 0; y < ny; y++)
112     for (int x = 0; x < nx; x++)
113         if (label(x, y) == Empty) label(x, y) = countNbrBombs(x, y);
114 }
115
116 static bool getPos(int& x, int& y)
117 {
118     printf("\n지뢰(P) 행(A-I) 열(9-1)\n 입력 --> ");
119     bool isBomb = false;
120     y = toupper(_getch()) - 'A';
121     if (y == 'P' - 'A')
122     {
123         isBomb = true;
124         y = toupper(_getch()) - 'A';
125     }
126     x = _getch() - '1';
127     return isBomb;
128 }
129
130 static int checkDone()
131 {
132     int count = 0;
133     for (int y = 0; y < ny; y++)
134         for (int x = 0; x < nx; x++)
135         {
136             if (mask(x, y) != Open) count++;
137             else if (isBomb(x, y)) return -1;
138         }
139     return (count == nBomb) ? 1 : 0;
140 }
```

9 % No issues found

C:\Users\user\source\repos\Week5_Homework\Week5_Homework.exe

발견 : 9 전체 : 13
①②③④⑤⑥⑦⑧⑨
A 1 1 1 1 1 1
B 3 1 1 2 2 1
C 3 1 2 2 1 1
D 2 2 1 2 3 1 1
E 1 1 1 2 1 1 1
F 1 1 1 2 2
G 1 2 1 2
H
I

지뢰(P) 행(A-I) 열(9-1)
입력 -->

MineSweeper.cpp Week5_Homework (Global Scope) countNbrBombs(int x, int y)

```
139     return (count == nBomb) ? 1 : 0;
140 }
141 void playMineSweeper(int total)
142 {
143     int x, y, status;
144     init(total);
145     do
146     {
147         print();
148         bool isBomb = getPos(x, y);
149         if (isBomb) mark(x, y);
150         else dig(x, y);
151         status = checkDone();
152     } while (status == 0);
153     print();
154     if (status < 0) printf("\n실패 : 지뢰 폭발!!!\n\n");
155     else printf("/n성공 : 탐색 성공!!!\n\n");
156 }
157
158 void main()
159 {
160     int total;
161     printf("<Mine Sweeper>\n");
162     printf("매설할 총 지뢰의 개수 입력 : ");
163     scanf_s("%d", &total);
164     playMineSweeper(total);
165 }
```

9 % No issues found

Microsoft Visual Studio Debug Console

발견 : 13 전체 : 13
①②③④⑤⑥⑦⑧⑨
A 1 1 2 1 1 1
B 2 5 3 1 2 2
C 2 3 2 2 1 2 1
D 1 2 3 2 2 1 2 1
E 1 1 1 1 2 2 1
F 2 2 1 1 2 2 1
G 2 2 1 1 2 2 1
H 1 1 1 1 1
I

/n성공 : 탐색 성공!!!

C:\Users\user\source\repos\Week5_Homework\Week5_Homework.exe (process 8756) exited with code
Press any key to close this window . . .

