

Human102.hMonsterWorldGame102.cppVariousMonsters102.hMonsterWorld102.hMonster102.hMatrix102.hCanvas102.h

Week10\_Homework2(Global Scope)

```
1 #include "MonsterWorld102.h"
2 #include "VariousMonsters102.h"
3 #include "Human102.h"
4 #include <time.h>
5
6 void main()
7 {
8     srand((unsigned int)time(NULL));
9     int w = 16, h = 8;
10    MonsterWorld game(w, h);
11
12    game.add(new Zombie("허접한좀비", "S", rand() % w, rand() % h));
13    game.add(new Vampire("뱀파이어짱", "★", rand() % w, rand() % h));
14    game.add(new KGhost("어찌다귀신", "♥", rand() % w, rand() % h));
15    game.add(new Jiangshi("못먹어도고", "↔", rand() % w, rand() % h, true));
16    game.add(new Jiangshi("못먹어도고", "♢", rand() % w, rand() % h, false));
17    game.add(new Human("미래의인류", "♀", rand() % w, rand() % h));
18    game.play(500, 10);
19    printf("-----게임 종료-----\n");
20 }
```

C:\Users\User\source\repos\Week10\_Homework2\Week10\_Homework2.exe

[ Monster World (Dynamic World) ]

전체 이동 횟수 = 0  
남은 아이템 수 = 128  
허접한좀비 \$ : 0  
뱀파이어짱★ : 0  
어찌다귀신♥ : 0  
못먹어도고↔ : 0  
못먹어도고♢ : 0  
미래의인류♀ : 0  
엔터를 누르세요...

Human102.hMonsterWorldGame102.cppVariousMonsters102.hMonsterWorld102.hMonster102.hMatrix102.hCanvas102.h

Week10\_Homework2Human

```
1 #pragma once
2 #include "Monster102.h"
3 #include <conio.h>
4 enum Direction { Left = 75, Right = 77, Up = 72, Down = 80 };
5
6 class Human : public Monster {
7 public:
8     Human(string n = "미래인류", string i = "♀", int px = 0, int py = 0)
9         : Monster(n, i, px, py) {}
10    ~Human() { cout << "[Human ]"; }
11
12    int getDirKey() { return _getche() == 224 ? _getche() : 0; }
13
14    void move(int** map, int maxx, int maxy) {
15        if (_kbhit())
16        {
17            char ch = getDirKey();
18            if (ch == Left) x--;
19            else if (ch == Right) x++;
20            else if (ch == Up) y--;
21            else if (ch == Down) y++;
22            else return;
23            clip(maxx, maxy);
24            eat(map);
25        }
26    }
27 }
```

C:\Users\User\source\repos\Week10\_Homework2\Week10\_Homework2.exe

[ Monster World (Dynamic World) ]

전체 이동 횟수 = 28  
남은 아이템 수 = 50  
허접한좀비 \$ : 17  
뱀파이어짱★ : 15  
어찌다귀신♥ : 10  
못먹어도고↔ : 8  
못먹어도고♢ : 16  
미래의인류♀ : 12

Human102.hMonsterWorldGame102.cppVariousMonsters102.hMonsterWorld102.hMonster102.hMatrix102.hCanvas102.h

Week10\_Homework2(Global Scope)

```
1 #pragma once
2 #include "Monster102.h"
3
4 class Zombie : public Monster {
5 public:
6     Zombie(string n = "허접한좀비", string i = "S", int x = 0, int y = 0)
7         : Monster(n, i, x, y) {}
8     ~Zombie() { cout << "Zombie"; }
9 };
10
11 class Vampire : public Monster {
12 public:
13     Vampire(string n = "뱀파이어", string i = "★", int x = 0, int y = 0)
14         : Monster(n, i, x, y) {}
15     ~Vampire() { cout << "Vampire"; }
16
17     void move(int** map, int maxx, int maxy) {
18         int dir = rand() % 4;
19         if (dir == 0) x--;
20         else if (dir == 1) x++;
21         else if (dir == 2) y--;
22         else y++;
23         clip(maxx, maxy);
24         eat(map);
25     }
26 };
27
28 class KGhost : public Monster {
29 public:
30     KGhost(string n = "저녀귀신", string i = "♥", int x = 0, int y = 0)
31         : Monster(n, i, x, y) {}
32     ~KGhost() { cout << "KGhost"; }
33
34     void move(int** map, int maxx, int maxy) {
35         x = rand() % maxx;
```

C:\Users\User\source\repos\Week10\_Homework2\Week10\_Homework2.exe

[ Monster World (Dynamic World) ]

전체 이동 횟수 = 172  
남은 아이템 수 = 9  
허접한좀비 \$ : 25  
뱀파이어짱★ : 17  
어찌다귀신♥ : 17  
못먹어도고↔ : 22  
못먹어도고♢ : 17  
미래의인류♀ : 21

```

34 void move(int** map, int maxx, int maxy) {
35     x = rand() % maxx;
36     y = rand() % maxy;
37     clip(maxx, maxy);
38     eat(map);
39 }
40 };
41
42 class Jiangshi : public Monster {
43     bool bHori;
44 public:
45     Jiangshi(string n = "대륙강shi", string i = "o", int x = 0, int y = 0, bool bH = true)
46         : Monster(n, i, x, y), bHori(bH) {}
47     ~Jiangshi() { cout << "Jangshi"; }
48
49     void move(int** map, int maxx, int maxy) {
50         int dir = rand() % 2;
51         int jump = rand() % 2 + 1;
52         if (bHori) x += ((dir == 0) ? -jump : jump);
53         else y += ((dir == 0) ? -jump : jump);
54         clip(maxx, maxy);
55         eat(map);
56     }
57 };

```

[ Monster World (Dynamic World) ]  
 . . . . . ←♥.  
 . . . . . § . . . . .  
 . . . ★ . . . . .  
 . . . . . . . . . .  
 . . . . . ♀ . . . . . ■  
 . . . ↓ . . . . .  
 점체 이동 횟수 = 386  
 남은 아이템 수 = 1  
 허접한좀비 § :25  
 뱀파이어정 ★:18  
 어찌다귀신 ♥:17  
 못먹어도고 ←:25  
 못먹어도고 ↓:18  
 미래의인류 ♀:24

The screenshot displays a C++ development environment with two main windows.

**Left Window: Code Editor**

File Name: `MonsterWorld102.h`

(Global Scope)

```
1 #pragma once
2 #include "Canvas102.h"
3 #include "Monster102.h"
4 #include "Matrix102.h"
5 #include <Windows.h>
6 #define MAXMONS 8
7 ...
8 class MonsterWorld
9 {
10     Matrix world;
11     int xMax, yMax, nMon, nMove;
12     Monster* pMon[MAXMONS];
13     Canvas canvas;
14 
15     int& Map(int x, int y) { return world.elem(x, y); }
16     bool isDone() { return countItems() == 0; }
17     int countItems() {
18         int nItems = 0;
19         for (int y = 0; y < yMax; y++)
20             for (int x = 0; x < xMax; x++)
21                 if (Map(x, y) > 0) nItems++;
22         return nItems;
23     }
24     void print() {
25         canvas.clear(" ");
26         for (int y = 0; y < yMax; y++)
27             for (int x = 0; x < xMax; x++)
28                 if (Map(x, y) > 0) canvas.draw(x, y, "");
29         for (int i = 0; i < nMon; i++)
30             pMon[i] -> draw(canvas);
31         canvas.print("[ Monster World (Dynamic World) ]");
32 
33         cerr << " 전체 이동 횟수 = " << nMove << endl;
34         cerr << " 남은 아이템 수 = " << countItems() << endl;
35         for (int i = 0; i < nMon; i++) pMon[i] -> print();
36     }
```

The screenshot shows the C++ code for the MonsterWorld class in the Week10\_Homework2 project. The code defines a 2D world with monsters and a player, and a play function that simulates movement and combat.

```

34 cerr << " 남은 아이템 수 = " << countItems() << endl;
35 for (int i = 0; i < nMon; i++) pMon[i]->print();
36 }
37 public:
38 MonsterWorld(int w, int h) : world(h, w), canvas(w, h), xMax(w), yMax(h) {
39     nMon = 0;
40     nMove = 0;
41     for (int y = 0; y < yMax; y++)
42         for (int x = 0; x < xMax; x++) Map(x, y) = 1;
43 }
44 ~MonsterWorld() {
45     for (int i = 0; i < nMon; i++)
46         delete pMon[i];
47 }
48 void add(Monster* m) { if (nMon < MAXMONS) pMon[nMon++] = m; }
49 void play(int maxwalk, int wait) {
50     print();
51     cerr << " 엔터를 누르세요...";
52     getchar();
53     for (int i = 0; i < maxwalk; i++)
54     {
55         for (int k = 0; k < nMon; k++)
56             pMon[k]->move(world.Data(), xMax, yMax);
57         nMove++;
58         print();
59         if (isDone()) break;
60         Sleep(wait);
61     }
62 }
63 };

```

The Debug Console shows the output of the program, displaying the monster world grid and the player's movement and combat results.

```

[ Monster World (Dynamic World) ]
. . . . . ★ .
. . . ♥ . . . . .
. . . . . . . . .
. . . . . ← . . .
. . . ♀ § . . . .
. . . . . . . . .
. . . . . ↓ . . .

전체 이동 횟수 = 500
남은 아이템 수 = 1
허접한준비 § :25
뱀파이어짱 ★ :18
어쩌다귀신 ♥ :17
못먹어도고 ↔ :25
못먹어도고 ↓ :18
미래의인류 ♀ :24
-----게임 종료-----
허접한준비 § 물러갑니다~~~
뱀파이어짱 ★ 물러갑니다~~~
어쩌다귀신 ♥ 물러갑니다~~~
못먹어도고 ↔ 물러갑니다~~~
못먹어도고 ↓ 물러갑니다~~~
미래의인류 ♀ 물러갑니다~~~

```

```
Human102.h  MonsterWorldGame102.cpp  VariousMonsters102.h  MonsterWorld102.h  Monster102.h  Matrix102.h  Canvas102.h
Week10_Homework2  (Global Scope)
1  #pragma once
2  #include "Canvas102.h"
3  #define DIM 40
4
5  class Monster
6  {
7  public:
8      string name, icon;
9      int x, y, nItem;
10
11      void clip(int maxx, int maxy) {
12          if (x < 0) x = 0;
13          if (x >= maxx) x = maxx - 1;
14          if (y < 0) y = 0;
15          if (y >= maxy) y = maxy - 1;
16      }
17      void eat(int** map) {
18          if (map[y][x] == 1)
19          {
20              map[y][x] = 0;
21              nItem++;
22          }
23      }
24  public:
25      Monster(string n = "나괴물", string i = "※", int px = 0, int py = 0)
26          : name(n), icon(i), x(px), y(py), nItem(0) { }
27      ~Monster() { cout << "\t" << name << icon << "를러갑니다~~~\n"; }
28
29      void draw(Canvas& canvas) { canvas.draw(x, y, icon); }
30      void move(int** map, int maxx, int maxy) {
31          switch (rand() % 8)
32          {
33              case 0: y--; break;
34              case 1: x++; y--; break;
35              case 2: x++; break;
36              case 3: x++; y++; break;
37              case 4: y++; break;
38              case 5: x--; y++; break;
39              case 6: x--; break;
40              case 7: x--; y--; break;
41          }
42          clip(maxx, maxy);
43          eat(map);
44      }
45      void print() { cout << "\t" << name << icon << ":" << nItem << endl; }
46  };
79 %  No issues found  Ln: 2  Ch: 20  TABS  CRLF
```

```
Human102.h  MonsterWorldGame102.cpp  VariousMonsters102.h  MonsterWorld102.h  Monster102.h  Matrix102.h  Canvas102.h
Week10_Homework2  Monster  eat(int ** map)
34      case 1: x++; y--; break;
35      case 2: x++; break;
36      case 3: x++; y++; break;
37      case 4: y++; break;
38      case 5: x--; y++; break;
39      case 6: x--; break;
40      case 7: x--; y--; break;
41  }
42      clip(maxx, maxy);
43      eat(map);
44  }
45      void print() { cout << "\t" << name << icon << ":" << nItem << endl; }
46  };
79 %  No issues found  Ln: 22  Ch: 4  Col: 10  TABS  CRLF
```

```
Human102.h  MonsterWorldGame102.cpp  VariousMonsters102.h  MonsterWorld102.h  Monster102.h  Matrix102.h  Canvas102.h
Week10_Homework2  Matrix
1  #pragma once
2  #include <iostream>
3  #include <iomanip>
4  using namespace std;
5
6  class Matrix
7  {
8      int rows, cols;
9      int** mat;
10  public:
11      Matrix(int r = 0, int c = 0) : rows(r), cols(c), mat(NULL) {
12          mat = new int*[rows];
13          for (int i = 0; i < rows; i++) mat[i] = new int[cols];
14      }
15      ~Matrix() {
16          if (mat != NULL)
17          {
18              for (int i = 0; i < rows; i++)
19                  delete[] mat[i];
20              delete[] mat;
21          }
22      }
23      int& elem(int x, int y) { return mat[y][x]; }
24      int Rows() { return rows; }
25      int Cols() { return cols; }
26      int** Data() { return mat; }
27      void print(const char* str = "Mat") {
28          cout << str << " " << rows << "x" << cols << endl;
29          for (int i = 0; i < rows; i++)
30          {
31              for (int j = 0; j < cols; j++)
32                  cout << setw(4) << mat[i][j];
33              cout << "\n";
34          }
35      }
36  };
79 %  No issues found  Ln: 44  Ch: 3  TABS  CRLF
```

Human102.hMonsterWorldGame102.cppVariousMonsters102.hMonsterWorld102.hMonster102.hMatrix102.hCanvas102.h

Week10\_Homework2Matrix

34

}

35

}

36

void setRand(int val = 100) {

37

if (mat != NULL)

38

{

39

for (int i = 0; i < rows; i++)

40

for (int j = 0; j < cols; j++)

41

mat[i][j] = (rand() % val);

42

}

43

}

44

};

Human102.hMonsterWorldGame102.cppVariousMonsters102.hMonsterWorld102.hMonster102.hMatrix102.hCanvas102.h

Week10\_Homework2Canvas

1

#pragma once

2

#include <iostream>

3

#include <string>

4

#define MAXLINES 100

5

using namespace std;

6

7

class Canvas

8

{

9

string line[MAXLINES];

10

int xMax, yMax;

11

public:

12

Canvas(int nx = 10, int ny = 10) : xMax(nx), yMax(ny) {

13

for (int y = 0; y < yMax; y++)

14

line[y] = string(xMax \* 2, ' ');

15

}

16

void draw(int x, int y, string val) {

17

if (x >= 0 && y >= 0 && x < xMax && y < yMax)

18

line[y].replace(x \* 2, 2, val);

19

}

20

void clear(string val = " ") {

21

for (int y = 0; y < yMax; y++)

22

for (int x = 0; x < xMax; x++)

23

draw(x, y, val);

24

}

25

void print(const char\* title = "<My Canvas>") {

26

system("cls");

27

cout << title << endl;

28

for (int y = 0; y < yMax; y++)

29

cout << line[y] << endl;

30

cout << endl;

31

}

32

};