

Name_____

Let's now bring the things that we've been studying together and have a little fun along the way.

This assignment takes us into rural Ireland amongst the green hills and valleys far far away. In the mists of the ancient past, amid the wee people, leprechauns, fairies, and pots of gold we find our hero, a simple cockroach, Reginald Pellation O'Reilly. On arriving, we look over the hill down on the bucolic valley below. There we find,

- A small and simple village, easily more than a thousand years old.
Our village appears as a 5 by 5 grid containing with 25 thatched roof cottages.
- People etc.

We will have 2 main people

You the adventurous wanderer, exploring from cottage to cottage in the village.

A Drunken Cockroach, it seems that the wee cockroach had a rather unhappy childhood. During one of its early years, wandering around on a table in an old crofters cottage in a distant corner of Ireland, he was not paying attention and fell into a bit of the barley. After swimming around in the pot for several weeks, one could easily say that he was well preserved. Freed once again he set out to explore the outside world. He has been seen weaving randomly from cottage to cottage ever since.

Here is a simple program to generate random numbers if you need them,

```
#include <iostream>
#include <ctime>
using namespace std;
int main(void)
{
    int aValue;
    srand( (unsigned)time( NULL ) );
    for (int i=0; i< 10; i++)
    {
        aValue = rand() % 4;
        cout << aValue << endl;
    }
    return 0;
}
```

- Things

Food gives you energy to keep going.

Teleporter moves the cockroach at random to some other cottage.

Light allows you to see in a dark cottage - tells you what's in there.

- Moves

Up or *down* allows you to move up or down by one space.

Left or *right* allows you to move left or right by one space.

Random a move to anywhere – reserved for the wee cockroach

Teleport allows the cockroach to teleport to some other cottage at any time.

Each move consumes 1 food unit for you. After teleporting the cockroach must rest for 3 moves.

- Rules and Commands

You invent these. Use your imagination and creativity when defining commands and setting the rules of your game.

Remember that neither you nor the cockroach cannot go outside the boundaries of the village.

Simple console input and output is sufficient for playing the game. The emphasis here is on the design, not a fancy user interfaces.

Your design must include the following

1. The data structures

- struct
- array

2. The following operators and flow of control expressions

- new and delete
- for, while, or do while loops
- switch statement
- functions

3. Your program must be decomposed into main, implementation, and header files.

Your deliverables for the final project include the following,

Requirements Specification (10 points)

Requirements definition is the process of identifying and understanding what the needs of all interested parties are then documenting these needs as written definitions and

descriptions. The focus is on *what* problem the system has to solve. The emphasis is on the world in which the system will operate not on the system itself.

Test Plan (10 points)

Test Plan identifies *what* tests need to be carried out based upon the original requirements specification. It describes in general terms the following information:

- *What* is to be tested?
- The testing order within each type of test.
- Assumptions made.
- Algorithms that may be used.

Test Cases and Results (10 points)

The test cases evolved from the test plan, provide the detailed steps for each test.

Annotated results of executing your test cases.

Source Code (50 points)

Listings of your program.