Class CMPS 261
Section 001
Problem Programming Assignment #3
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Due Date 12:30pm November 3, 2005

I. Requirements Documentation

I.1 Description of the Problem

Name: Random Maze Generator
Problem Statement: A program that will automatically generate a random maze needs to be designed and implemented. The program must output the walls of each cell that are still standing after a disjoint set has been used to generate the random maze.
Problem Specification: The program will create a random maze and output it to the screen as long as many times as the user chooses to do so. Each mazeGenerator will use a UnionFind to keep track of the path it has created.

I.2 Input Information

I.2.1 Input Streams

Name: cin
Description: Standard input stream
Format: text
Size: N/A
Sample: N/A

I.2.2 Input Items

Description: Input to continue generating mazes
Type: char
Range of acceptable values: ‘y’ or ‘Y’ or any other value.

Description: Input for number of rows
Type: int
Range of acceptable values: values of ‘3’ or greater.

Description: Input for number of columns
Type: int
Range of acceptable values: values of ‘3’ or greater.

I.3 Output Information

I.3.1 Output Streams

Name: cout

Description: Used to output the completed random maze.
Format: Cell “number”: “Wall” “Wall”
Size: Depends on the size of the maze: rows * columns + 8 lines
Sample:
Do you want to create a maze (y/n)? y

How many rows? 3

How many columns? 3

Cell 1: [W] [E]
Cell 2: [N] [W] [E]
Cell 3: [N] [W] [E]
Cell 4: [W]
Cell 5: [E]
Cell 6: [W] [E]
Cell 7: [W] [E]
Cell 8: [S] [W]
Cell 9: [S] [E]
Press ENTER

I.3.2 Output Items

Description: A cell’s walls still standing
Type: Text
Range of acceptable values: [N], [S], [W], and/or [E]

I.4 User Interface Information

I.4.1 Description

The program will not have a menu, it will only let the user to create a maze or quit. If the user chooses to create a maze, the program will prompt the user for the number of rows and the number of columns that the maze should have. Only when the user chooses to exit the program by not creating a new maze will the program quit.