A MINI PROJECT REPORT ON

“Finding Shortest Path by Comparative Manner in Maze”

SUBMITTED TO THE SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE IN THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE

OF

SECOND YEAR OF ENGINEERING(COMPUTER ENGINEERING)

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PUNE - 411005.

SAVITRIBAI PHULE PUNE UNIVERSITY [2022 - 23]

Progressive Education Society's

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Department of Computer Engineering

Shivajinagar, Pune - 411005.

CERTIFICATE

This is to certify that the following students of Second Year of Computer Engineering of PES's, Modern College of Engineering have successfully completed their mini project and design of project entitled "Flower design using DEV C++" under the guidance of the course instructor.

The Group Members are:

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This is in partial fulfillment of the award of the degree Second Year of Computer Engineering of Savitribai Phule Pune University.

Date:

Course Instructor

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Prof. Dr. Mrs. S. A. Itkar

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Acknowledgement

It gives us pleasure in presenting the partial project report on **“Flower design using dev C++”**.

Firstly, we would like to express our indebtedness appreciation to our course instructor. Her constant guidance and advice played very important role in making the execution of the re- port. She always gave us her suggestions that were crucial in making this report as flawless aspossible.

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Last but not the least, the backbone of our success and confidence lies solely on blessings of dear parents and lovely friends.

Suraj Patil
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Abstract

For solving this maze stages computer is going through both backtracking and graph algorithms. Backtracking is an important tool for solving constraint satisfaction problems and graph algorithm is finding shortest path to reach at destination.

After reaching at destination game will over with displaying time taken to solve maze by backtracking and graph algo with comparative manner. Two important concepts that we are going to highlight these are: The typical scenario where a backtracking algorithm is when you try to find your way out in a maze. Every time you reach a dead-end, you backtrack to try another path until you find the exit or all path have been explored.

With Dijkstra's Algorithm, you can find the shortest path between nodes in a graph. Particularly, you can find the shortest path from a node (called the "source node") to all other nodes in the graph, producing a shortest-path. In such a way We have done our project to find shortest path in maze.

That was all about finding shortest path in brief.

1.

Introduction

1.1 Introduction

Here basically we are going through comparative manner in beteween both graph and backtracking algorithm .which will help us to understand the time difference with diference in no of covered block by each of them. its differniating both algorithms.

The typical scenario where a backtracking algorithm is when you try to find your way out in a maze.

Every time you reach a dead-end, you backtrack to try another path until you find the exit or all path have been explored.
For backtracking Form, a recursive function, which will follow a path and check if the path reaches the destination or not.
Decision Problem: In this, we search for a feasible solution o Optimization Problem: In this, we search for the best solution

2.

Description

2.1 Description

We have made this project by using the concepts of computer graphics and object oriented programming using C++. We have used graphics libraries like

include<stdio.h>
include<conio.h>
include<dos.h>
include<graphics.h>

The stdio.h header file reads the whole programming file at this point or at once. The conio.h header file provides the console input output functionality to the program. The dos.h header filehas functions that are used for handling interrputs, producing sounds, date and time functins etc. and the last header file i.e graphics.h provides the graphics related functionalities.

A backtracking algorithm is a recursive algorithm that attempts to solve a given problem by testing all possible paths towards a solution until a solution is found. Each time a path is tested, if a solution is not found, the algorithm backtracks to test another possible path and so on till a solution is found or all paths have been tested. The typical scenario where a backtracking algorithm is when you try to find your way out in a maze. Every time you reach a dead-end, you backtrack to try another path until you find the exit or all path have been explored.
• Time Complexity: O(2^(n^2)). 2^(n^2) .
• Space Complexity: O(n^2).

This algorithm is used in GPS devices to find the shortest path between the current location and the destination. It has broad applications in industry, specially in domains that require modeling networks

3.

Software and Hardware Specifications

3.1 Software Specifications

For this mini project we have required the following software:

- Windows 10 operating system
- A C++ IDE which supports the graphics libraries (DEV C++).
- Some graphics libraries.,etc

3.2 Hardware Specifications

CPU: Quad-core Intel or AMD processor, 2.5 GHz or faster..
•STO: 4 GB available space.
• Dev C++ or any other compiler with graphic libraries.
• Memory: 16 GB.
• Graphics Card: AMD Radeon R5 M230. • CPU: Intel Pentium 4 2.20GHz. • File Size: 4 GB.
• OS: Windows 10 64 Bit.

4.

Results

4.1 Results:

A maze is a path or collection of paths, typically from an entrance to a goal. The word is used to refer both to branching tour puzzles through which the solver must find a route, and to simpler non-branching ("unicursal") patterns that lead unambiguously through a convoluted layout to a goal.

The term "labyrinth" is generally synonymous with "maze", but can also connote specifically a unicursal pattern.[1] The pathways and walls in a maze are typically fixed, but puzzles in which the walls and paths can change during the game are also categorised as mazes or tour puzzles.

Thus we have successfully implemented our programm of finding shortest path in maze using backtracking and graph algorithm .

5.

Conclusion

5.1 Conclusion:

Maze solving is the act of finding a route through the maze from the start to finish. Some maze solving methods are designed to be used inside the maze by a traveler with no prior knowledge of the maze, whereas others are designed to be used by a person or computer program that can see the whole maze at once.

“Maze game is generally played by user but here we are providing stages to computer in different manner for finding automatic path by using backtracking as well as graph algorithm.

Which will display its time difference and difference in covered blocks still reaching its destination.We learnt the concept of both algorithm and its actual use.”