Pac Man: Game Development using PDA and OOP

Kuldeep Vayadande[1]
Department of Artificial Intelligence and Data Science
Vishwakarma Institute of Technology
Pune, India

Harshwardhan More[2]
Department of Artificial Intelligence and Data Science
Vishwakarma Institute of Technology
Pune, India

Omkar More[3]
Department of Artificial Intelligence and Data Science
Vishwakarma Institute of Technology
Pune, India

Shubham Mulay[4]
Department of Artificial Intelligence and Data Science
Vishwakarma Institute of Technology
Pune, India

Atharva Pathak[5]
Department of Artificial Intelligence and Data Science
Vishwakarma Institute of Technology
Pune, India

Vishwam Talnikar[6]
Department of Artificial Intelligence and Data Science
Vishwakarma Institute of Technology
Pune, India

---***---

Abstract — Game Generation in schools has been dramatically reduced because of the usage of computer learning games in education. As a result, playing computer games boosts student enthusiasm and fosters favorable attitudes about a variety of disciplines. In instance, several studies have found that employing versions computer games improves student concentration, increases students' hunger to study, and leads to do difficult work by student, so this paper contains a one of type of the Pacman game. Experimentation in the classroom has proven that this game is effective.

Keywords — Game, programming, Pacman, Learning Game

I. INTRODUCTION

Computer games, that square measure sometimes related to kids and pleasure, square measure varied and attracted persons of all ages yet as those of varied backgrounds.[12] Nowadays, the needs of pc games aren't just for diverting, however additionally for learning. Pac-Man[a] may be a labyrinth action game developed by Namco and introduced in arcades in 1980. To stop the harm of arcade machines, the initial Japanese title of Puck Man was altered to Pac-Man for worldwide releases. Midway produced the sport in North America as a part of a contract with Namco America. During this paper we are going to describe implementation of one of the types of the Pacman game. The use of this kind of computer games has considerably determined the issues of creation of games at school level **[1,2].** Truth be told, this new age is those understudies UN organization square measure raised inside the computerized world and square measure local speakers of the advanced language of PCs, computer games and accordingly the web. They pay a significant amount of your time getting a charge out of computer games [13], have the capacities to move and issue tackle among it and that they square measure at home with an undeniable degree of inspiration and commitment. Several of those kids at school these days square measure in danger of failure. This can be because students of this generation getting bore, laid low so for refreshing this type of game necessary **[3].** As well as they have bunch of inspiration to address it. Therefore, victimization of this type of PC games at school will help students for getting positive attitude as well as gaining concentration. Indeed, this game the vastly widespread game from its 1st unleashes through these days and it's created his own separate exitance in game history, and is among the famous game that are present. In addition, the bulk of game generations are square measure connected to the current game. The paper consists of different sections. The first section is the introduction to the pacman game and the related work done by the developers in the gaming industry. Next section is the methodology and algorithm of proposed game explained with the diagram and use of automata. and finally, the results and discussions on the running game with scope and limitations of the project.

II. LITERATURE REVIEW

Researchers have stated the effectiveness of different games and their advantages in various fields. creating this type of game supports a student academically and helps to increase concentration and learning ability[14]. These types of games that are present nowadays such as Tetris **[4].**

Its priority is taught using this method. In the game like Tetris, it consists of different figures made of different blocks known as tetramines. The main challenge is to control the sideways motion of the blocks while they are falling down and not making gaps between the blocks. The ultimate aim is to fill the maximum number of blocks at the bottom of the interface. This type of game of Tetris was created using different mapping techniques that are present today **[5].**

Crossword types of games are developed using OOP and different gui frameworks. Crossword is a form of word puzzle which is present in the form of a quadrilateral shape. The main challenge of this game is to create a word with the help of clues that are given in the game **[6].**

III. METHODOLOGY

The experimental Methodology of our project is supported by group coordination and participation of group members. It then includes capability of the group, knowledge about the project domain and application. Then it came to the study of literature and reviews of such projects that were accomplished before. This was all included within the pre-development stage of the methodology.

Pacman is a game contains a pacman, dots which is food of pacman, several ghost and some bonus food dots that make ghost eatable.

In this project we are using C language for the running of the game. We used visual studio code for the implementation of this project. We have created different structures for defining Pac man coordinates, for moving of ghosts. Then we initialize ghosts and empty fields with food. We are using concept pushdown automata to store the food(dots) to know whether Pac man can be eaten or not.

Then we create a function for moving our pacman in an empty field and give a connection to the arrow key which is present on the keyboard. In this project we used one function which is move figure (). This function deletes pacman from the old function and computes it into the new desired coordinate.
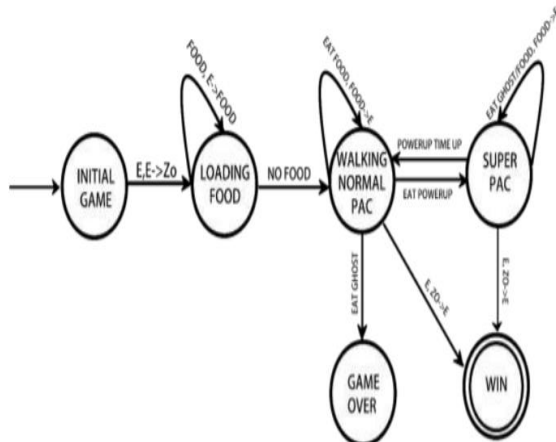
A. Flowdigram

Figure 1. Proposed System

B. Algorithm

Step 1: Begin

Step 2: create a set for setting up the coordinate

Step 3: Initialize empty field with dots,

playfield[i][j] = '.'

Step 4: Initialize ghost

allGhosts[i]. vx = 0;

allGhost[i]. vy=0;

allGhost[i]. chasing=true;

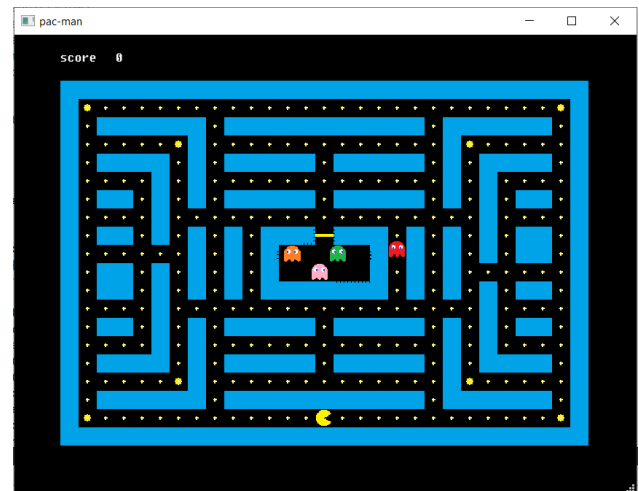Step 4: Initialize pacman as same as ghost

Step 5: call corresponding function to execute operation

Step 6: display the pacman with ghost

Step 7: re-iterate step 5 to 6

Step 8: Stop

IV. RESULTS AND DISCUSSION

This is the main screen of the game play and the output of the computer program as well. The Pacman who is the main character of the game is denoted by the letter P. The Ghosts who chase the ac man are denoted by letter G. When the game starts the ghosts start moving and pacman also moves based on the arrow keys pressed by the player. Pac man eats the dots in the map and the game finishes once it eats all the dots present in the map.

V. LIMITATIONS

- The Pac man Game is not multiplayer as well as it is not portable due to it being played on a large machine. If played on an arcade machine we cannot save its

progress. The game can be unreliable sometimes and can crash if the system doesn't work properly.

- Another limitation is that the game can be addictive and engaging. This will have an adverse effect on a student playing this game.

VI. CONCLUSION

Pushdown automata has been planned to style the Pacman game by understanding a finite-state machine with a stack to store the inputs specified the system will recognise it. it's provided that there's consistency between the inputs and therefore the expected outputs. We believe that the project was completed with success. This game elaborates a straightforward type of the game. This game helps to enhance the concentration power and process ability of the code. At the end, we have gained a tendency to observe that there are many benefits of such types of games.

This type of pc games will help to improve students' concentration as well as build learning about additional gratification.

VII. FUTURE SCOPE

The existing system is a simple programme developed in C language. In future the addition of a good GUI can be done with addition of sound effects, color effects to it. The challenges in the game can be increased and can be made more interesting using AI based bots. For a game there is always a scope for improvement and bug fixes.

References

[1] Simpson, Elizabeth S. (2005). Evolution within the Classroom: What Teachers got to realize the computer game Generation. TechTrends: Linking analysis & apply to boost Learning, v49. Pages 17-22 [2] brandy Prensky. (2004). Digital Game-Based Learning. Paragon House Publishers.

[3] Olga Shabalina, Pavel Vorobkalov, Alexander Kataev and Alexey Tarasenko. (2009). Game-Based Approach in it Education. In Proceedings of the Fourth International Conference "Modern (e-) Learning" MeL 2009, Varna, Bulgaria.

[4] Zulkernain, I. A. (2006). A framework and a strategy for developing authentic artist e-Learning environments. Educational Technology & Society, 9 (2). Pages 198-212.

[5] Zukerman, I. A., and Parmar, F. (2004). AGORA - associate degree Engine for Automatic Generation of Game-Based Incidental e-Learning Environments from UML Activity Diagrams. In Proceedings of the 2004 International analysis Conference on Innovation in info Technology, October 4-6, 2004, Dubai, UAE.

[6] Roslina Ibrahim, Rasimah Che Mohd Yusoff, Hasiah Mohamed Omar and Azizah Jaafar. (2011). Students Perceptions of mistreatment academic Games to be told Introductory Programming. laptop and data Science.

[7] Mathieu Muratet, Patrice Torguet, Fabienne Viallet and Jean-Pierre Jessel. (2010). Experimental Feedback on Plug&Play: a heavy Game for Programming apply. The Eurographics Association and Blackwell commercial enterprise Ltd. Volume 30, Issue 1, pages 61–73, March 2011.

[8] Panoutsopoulos, H., & Sampson, D. G. (2012). A Study on Exploiting Commercial Digital Games into college Context. academic Technology & Society, 15 (1). Pages 15–27.

[9] István Szita and András Lorincz. (2007). Learning to Play mistreatment Low- Complexity Rule-Based Policies: Illustrations through Ms. Pac-Man. Journal of computer science analysis, Volume 30, pages 659-684.

[10] Fathi Essalmi, Leila Jemni Mountain Ayed, Mohamed Jemni. (2010). An Ontology primarily based Approach for choice of acceptable E-learning Personalization Strategy. The tenth IEEE International Conference on Advanced Learning Technologies, July 2010, Sousse, Tunisia.

[11] Fathi Essalmi, Leila Jemni Mountain Ayed, Mohamed Jemni. (2007). A Multi-Parameters Personalization Approach of Learning eventualities.

[12] Raza, Mir Adil, Kuldeep Baban Vayadande, and H. D. Preetham. "DJANGO MANAGEMENT OF MEDICAL STORE.", International Research Journal of Modernization in Engineering Technology and Science, Volume:02/Issue:11/November -2020.

[13] K.B. Vayadande, Nikhil D. Karande," Automatic Detection and Correction of Software Faults: A Review Paper", International Journal for Research in Applied Science & Engineering Technology (IJRASET) ISSN: 2321-9653, Volume 8 Issue IV Apr 2020.

[14] Kuldeep Vayadande, Ritesh Pokarne, Mahalaxmi Phaldesai, Tanushri Bhuruk, Tanmai Patil, Prachi Kumar, "SIMULATION OF CONWAY'S GAME OF LIFE USING CELLULAR AUTOMATA" International Research Journal of Engineering and Technology (IRJET), Volume: 09 Issue: 01 | Jan 2022, e-ISSN: 2395-0056, p-ISSN: 2395-0072