International Journal of Scientific Research & Engineering Trends
Volume 5, Issue 2, Mar-Apr-2019, ISSN (Online): 2395-566X

Snake Game for Android

Tushar Tokas Karan Arneja Sparsh Goel
Department of Information Technology
SRM Institute of Science and Technology
Ghaziabad, India
tushar.star.me@gmail.com

Abstract- **This project is aimed at creating a version of the snake game for android devices which can not only serve as a means of entertainment but also as a means to understand the development of technology in the past two decades from when the snake game was first popularized on Nokia devices. Even in the original snake game, there was multiplayer facility available provided that two devices were present and connected via an infrared connection. It presents a simple means to compare the technology used then and now, such as the difference in programming languages, algorithms and electronic devices. Traditional methods of creating Snake game usually include the use of coding languages to create an Engine and the main game, but this project implements use of script-free software to create the software. This is made possible by software called Clickteam Fusion. Clickteam Fusion is a game engine that uses an event based system instead of coding. The game helps get a good grasp of Clickteam Fusion as well, so new games can be made with this new understanding of modern technology.**

Keywords **– Android, Game, Script free, Snake Game.**

I. INTRODUCTION

Snake game is a genre of video games in which the player takes control of a line or a 'snake' which grows with each, 'apple' or food eaten. In a snake game, the line itself is the obstacle and collision with the line results in the termination of the game or a 'game over'. The concept of snake game originated in the Sega-released arcade game called 'Blockade' that released in 1976. Due to the ease of implementation of the game, there have been a number of iterations of the game. The game genre gained immense popularity after the implementation of the snake as a pre-loaded game into Nokia mobile devices.

Through this project, we aim to create a snake game by use of a script-free software which can help evaluate the difference in technologies that are more than four decades apart and how the modern technology is different than older methods. Snake game has been developed in a number of ways including microprocessor programming; object oriented coding languages and now using event-based game engines hence it serves as a good milestone. Even though there have been a number of different versions of the game, we have tried to introduce some new mechanics to the game. The speed of the game remains consistent throughout but is fast enough to be considered to be challenging. The game can end if the player inputs swipe command in the same direction as that of the snake. Also, there is no grid based play area, meaning the snake might just touch the edge of the food instead of the whole unit.

II. METHODS

1. Module 0 : Game Start

Fig.1 Module 0: Game Start.

This module initializes the game.This module acts when starting up a new game or in the event of a Game Over.

2. Module 1: Snake Body

Fig.2 Player Input in Snake Body Module.

© 2019 IJSRET

International Journal of Scientific Research & Engineering Trends
Volume 5, Issue 2, Mar-Apr-2019, ISSN (Online): 2395-566X

The Snake's head moves in the direction of the player's input which are given by swipes.

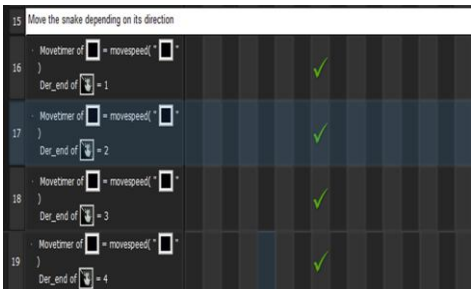

Fig.3 Direction check in Snake Body Module

The Snake's body moves across the board with respect to its current direction. For example: if a snake is moving vertically only horizontal swipes should change its direction and vertical swipes should not affect the snake. However, in our version of the snake game we have an additional mechanic of terminating the game if a swipe in a direction opposite to the snake's current direction is entered.

Fig.4 Game Over condition in Snake Body.

The game ends when the Snake's head collides with its body or goes out of play area i.e. collides with a wall.

3. Module 2 : Food

Fig.5 Module 2: Food

A new food unit spawns every time an existing unit is consumed by the Snake. Snake's size increases with each food unit consumed. A Flag is set to on as soon as food is consumed and turns off only when certain conditions for the spawn of a new food unit are met.

This module specifies the conditions for increasing the length of the Snake as well as the conditions for respawning of food in the event it is consumed by the Snake. These conditions are:

- The food must not respawn on top of a wall.
- The food must not respawn on top the Snake's head.
- The food must not respawn on top of the Snake's body.
- The food must not respawn on the 'Start!' banner.

4. Module 3 : Multi–Touch

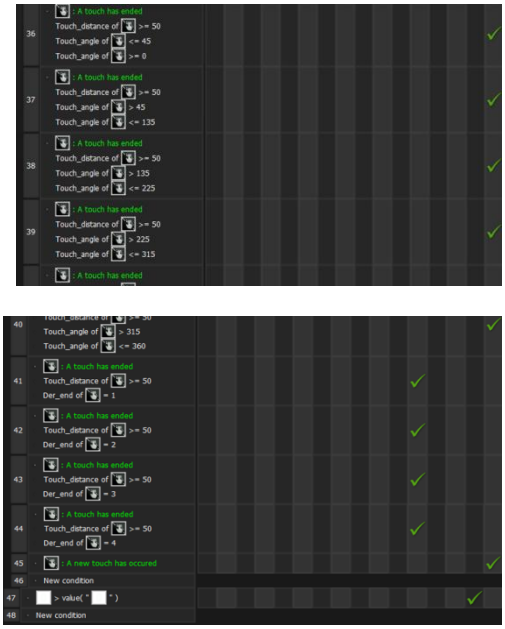

Fig.6 Module 3: Multitouch

The Multitouch module is responsible for the input from the user which is taken in swipes in the direction which the player intends to move the snake in. Swiping works by dragging a finger across the touch screen of the device. Using the multi touch module the game is able to identify a swipe and distinguish it from a tap. For the Snake to change its direction, the swipe must cover a certain distance. If the finger is dragged across a distance less than what is identified by the game as a swipe, the Snake will not change its direction and continue to move in the direction it previously moved in.

III. TESTING STRATEGIES

1. Compatibility Testing

Compatibility testing is done to ensure that the version of the game functions well for any and all designated systems, which may include old versions of software and/or hardware, such as older Android versions, devices with less RAM and so on. By compatibility testing, issues such as the stability or

© 2019 IJSRET

the application and the performance can be measured. Test cases and results of testing are shown in Table I.

Table 1 Compatibility Testing Test Cases and Results.

OS Version	Device Name	Result
Android 2.3.6	Samsung Galaxy Y	The game failed to start-up.
Android 6.0.0	ASUS Zenfone Lazer	The game worked as expected.
Android 9.0.0	OnePlus 6	The game worked as expected.
iOS 12.2	Apple iPhone X	The game failed to start-up.

IV. RESULTS

The game works as intended from the start point. The length of Snake's body increases each time food is consumed. The game is terminated upon collision with the Snake's body or the boundary. Fig. 7 shows the game before it starts, i.e. before any commands are inputted by the player. The game returns to this state and starts over in the case of a game over, i.e. collision with the Snake's body or with the wall. Fig. 8 shows an example of a game over condition, in which the snake goes out of bounds of the play area i.e. collides with a wall.

In case of a Game Over the game freezes until a new command is entered. Fig. 9 shows the snake moving with an increased length than when it starts. The length increases with every food unit consumed. The score counter increases as well, storing the highest score of the current session and updates in case the score is beaten. Other than the classic snake game mechanics, the snake can move in the immediate opposite direction when the score is 0, however in case the snake is tried to move in the opposite direction if it's length is greater than 0, it counts as a game over in the event of collision with body.

Fig. 7 Game state before starting.

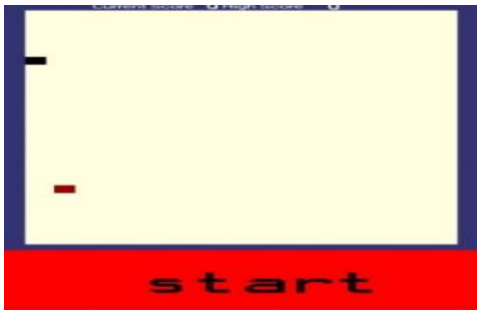

Fig.8 'Game Over' when Snake collides with a wall

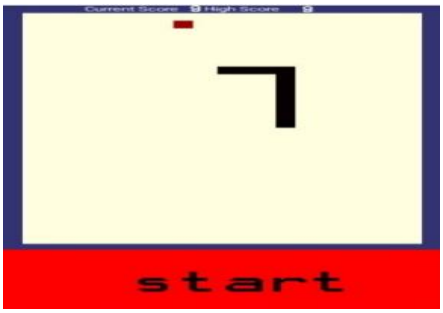

Fig.9 A moving Snake with an increasing score counter

V. CONCLUSION

In "snake game" a line or a snake confined to a rectangular board attempts to avoid the walls and its own body while eating pieces of food. As the snake eats the food, its body grows while the play area remains the same, causing the space through which the snake can navigate to become more confined. Furthermore, with each food unit eaten a new unit of food is generated in a random location in the playing area- adding an element of uncertainty to the program. It is also a project assigned by many teachers to students to test their Object Oriented skills. The game is also a popular source of entertainment for people of all age groups. Google took it to the next level and made it playable on the browser whenever 'snake' is typed in the search bar. Hence it is a good product to put on the Play Store. There are a number of iterations possible for the game by making it multiplayer and online, just as snake.io is a massively multiplayer browser game. The snake game is also a good benchmark for newly created projects as it offers simplicity in the concepts and game play while continuing to be attractive to newer audiences. It allows learning about not only games but algorithms and the basics of programming as well. Hence, the snake game is a project that offers a learning experience while continuing to be entertaining and possible profitable.

Future versions of the game may have:

- Multiplayer Options
- Better Graphics
- More options to increase difficulty
- A global ranking system

ACKNOWLEDGMENT

First and foremost, we would like to express our sincere gratitude to our guide, Mr.Chiranjit Dutta for his invaluable guidance and cooperation throughout the work. We also extend my heartfelt gratitude to Prof. Shashank Yadav, Project Coordinator, whose constant motivation and support made us enthusiastic throughout the work. We feel compelled to articulate our thankfulness to Dr. Anand Pandey, head of department, Department of Information Technology, for his encouragement which was a source of inspiration.

REFERENCES

[1] Cornelius J. van Rooyen, Willem S. van Heerden, Christopher W. Cleghorn "Playing the game of snake with limited knowledge: Unsupervised neuro-controllers trained using particle swarm optimization" 2017 IEEE 4th International Conference on Soft Computing & Machine Intelligence (ISCMI) November 2017

[2] Anunpattana Punyawee1, Chetprayoon Panumate2, Hiroyuki Iida "Finding Comfortable Settings of Snake GameUsing Game Refinement Measurement" Advances in Computer Science and Ubiquitous Computing, vol. 421, pp. 66-73, December 2016.

[3] Iida H., Takahara K., Nagashima J., Kajihara Y., Hashimoto T. "An Application of Game-Refinement Theory to Mah Jong.": Rauterberg M. (eds) Entertainment Computing – ICEC 2004. ICEC 2004.

© 2019 IJSRET