**MINOR PROJECT-1**

**SYNOPSIS**

**ON**

# SNAKE GAME IMPLEMENTATION IN MULTIPLE - USER ENVIRONMENT


## Abstract

This project aims to bring the fun and simplicity of snake game with some new features. It will include multiplayer feature that will allow more than one player to play the game. This project explores a new dimension in the traditional snake game to make it more interesting and challenging. In this two user simultaneously can play a game and winner is decided on the basis of their score. In this game there will be three different levels for two different mode that will be single player and multiplayer mode. The simplicity of this game makes it an ideal candidate for a minor project as we can focus on advanced topics like multiplayer functionality.

This will be our classic version of the most popular mobile and computer game named "SNAKE". The main objective of this game is to feed an increasing length of a snake with food particles which are found at random positions, picking up bonus food that occurs at regular intervals.

The game starts with selecting one of the three difficulty levels followed by a screen which asks the user to select whether he wishes to play a bounded game or an unbounded game. These concepts are discussed later in the synopsis.



Keywords: Snake game, Multiplayer, Score, Single player, Food, Levels, Bounded, Unbounded.

# 1. INTRODUCTION

The game called "Snake" or "Snake Game" typically involves the player controlling a line or snake, there is no official version of the game, so game play varies. The most common version of the game involves the snake or line eating items which make it longer, with the objective being to avoid running into a border or the snake itself for as long as possible. The player loses when the snake either runs into a border or its own body. Because of this, the game becomes more difficult as it goes on, due to the growth of the snake. Nokia has installed the "Snake Game" on many of its phones. The game is also available on several websites, including YouTube, which allows viewers to play the game while a video load.

Snake game is an ideal computer game, in which we control a snake to move around and collect food in a map.[1]

In the game, the snake is allowed to pass through all the area around a 2-Dimensional playing field (i.e.) game map which is surrounded by walls. At each distinct interval (a time step), the snake should move forward, turn left, turn right, as the snake requires and the snake cannot stop moving. The game will be generated randomly and a piece of food will be placed anywhere in the map, whenever there is no food on the map. When the snake moves towards the food and if the food is eaten then the length of the snake will be increased by one. The goal of the game is to eat as many foods without getting collide to the wall or by itself. The objective of the game is to maximize the score. The above-mentioned simple strategy may keep the snake alive, but without moving toward the apples efficiently it cannot get a high score. Thus, it is needed to be designed with more intelligent controller, which is the topic of this paper.

## 1.1) HISTORY OF SNAKE GAME

- The Snake has appeared in many different forms over the decades, but its first appearance took place in the mid-1970s and was called Blockade. It was the creation of Gremlin Industries, who specialized in coin-operated arcade machines. In 1984, they closed their doors, never to open again. But their game still lives on.
- By 1997, it had found its way into people’s pockets, onto their Nokia phones and created the craze of mobile gaming among teenagers. The Nokia 6110 was Nokia’s first phone with Snake and they continued to manufacture new models with the game installed throughout the next decade.

## 1.2) OBJECTIVE

This game aims to change the way people think of traditional snake game. It will offer the experi ence of commercial multilayer games to the player retaining the simplicity of traditional snake ga me.

The major objectives of this project are:

1. Tocreate a snake game that will have all the functionality of traditional snake games.
2. To introduce multilayer functionality in the game that will allow several players to play a

game simultaneously. It should be able to give the experience of a real time multiplayer g ame to the players.

3. To make use of keyboard keys to move the snake such as up, down or w, s.
4. To create simple Single player snake game.
5. To create Multi-player snake game.
6. To maintain high score table.

## 1.3) THE GAME OF SNAKE

Snake has simple rules:

1. The world is a grid.
2. The snake can only travel orthogonally along this grid.
3. This world has a border that kills the snake on contact.
4. The snake cannot stop moving.
5. If the snake runs into itself, it dies.
6. Every time the snake eats, it grows longer.
7. The goal is to grow as long as possible.

When playing the game, there is a decision to make each time the snake takes a step forward: continue straight, turn left, or turn right.

First assessing the state of the world that the snake lives in, then choosing the move that will keep it alive and continue to grow longer.

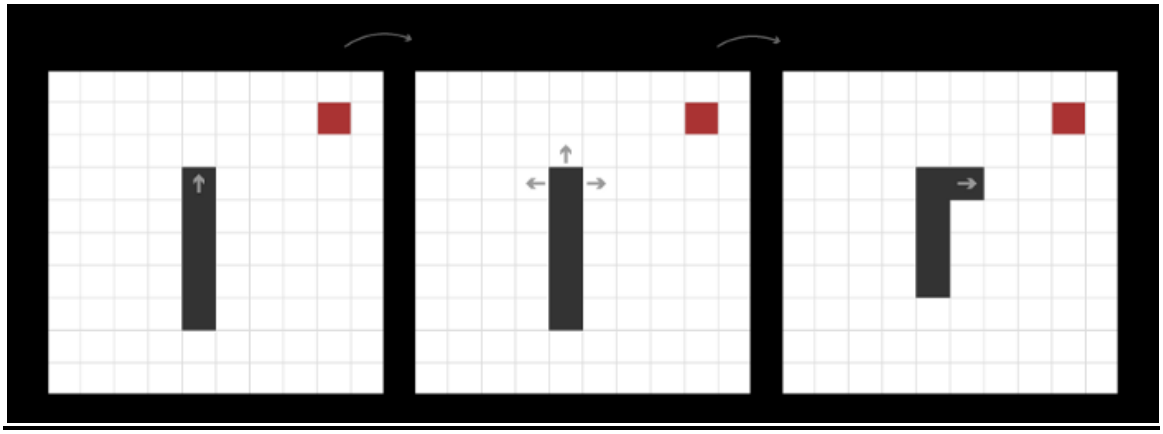

Fig 1 Movement of snake

## 1.4) GAMEPLAY

**Different modes used in the game**

- Easy mode: Here the box size in which the snake is allowed to move around freely is larger in size as compared to the other two modes. Hence, the user finds it a lot easier to control the snake. Chances for the snake to die are quite less
- Medium mode: Here the box size in which the snake is allowed to move around freely is larger in size as compared to the hard mode and smaller than in easy mode. Chances for the snake to die are moderate
- Hard mode: Here the box size in which the snake is allowed to move around freely is smallest. Chances for the snake to die are highest

**Different Gaming Arena**

- Unbounded mode: Here, during the process of travelling, if the snake hits the boundary wall, it does not die, instead it comes out from the opposite wall as though there is a continuation in the movement.
- Bounded mode: Here, during the process of travelling, if the snake hits the boundary wall, the snake dies, and this is counted as a loss of life. This is a tougher mode as compared to the unbounded mode.[2]

## 2. LITERATURE REVIEW

The concept originated in the 1976 arcade game Blockade and the ease of implementing Snake has led to hundreds of versions (some of which have the word snake or worm in the title) for many platforms. After a variant was preloaded on Nokia mobile phones in 1998, there was a resurgence of interest in the snake concept as it found a larger audience. There are over 300 Snake-like games for IOS alone. The Snake design dates back to the arcade game Blockade, developed and published by Gremlin in 1976.The first known personal computer version, titled Worm, was programmed in 1978 by Peter Trefonas of the US on the TRS-80,[3] and published by CLOAD magazine in the same year. This was followed shortly afterwards with versions from the same author for the Commodore PET and Apple II. In 1982's Snake for the BBC Micro, by Dave Bresnen, the snake is controlled using the left and right arrow keys relative to the direction it is heading in. The snake increases in speed as it gets longer, and there's only one life; one mistake means starting from the beginning. Nibbler (1982) is a single-player arcade game where the snake fits tightly into a maze, and the game play is faster than most snake designs. Another single-player version is part of the 1982 Tron arcade game, themed with light cycles. It reinvigorated the snake concept, and many subsequent games borrowed the light cycle theme. In 2017, Google released their version of the game as an Easter egg, whenever the phrases "snake", "play snake", "snake game" and "snake video game" are typed.

Nokia puts Snake on the majority of their phones, using the actual name Snake:

- Snake – The first published by Nokia, for monochrome phones. It was programmed in 1997 by Taneli Armanto of Nokia[4] and introduced on the Nokia 6110.[5]
- Snake II – Included on monochrome phones such as the Nokia 3310 from 2000.
- Snake Xenzia – Included on later-model monochrome phones (and most cheaper colour phones, such as the Series 30 and Series 30+ budget mobile devices).
- Snake EX – Included on colour phones. First introduced with the Nokia 9290 Communicator in 2002. It supports multiplayer through Bluetooth and Infra-Red.
- Snake EX2 – Introduced with the Nokia 3100 in 2003 and included in several Series 40 handsets.
- Snakes – A 3D version designed for the N-Gage in 2005. It featured multiplayer through Bluetooth. Later Nokia started pre-installing it (without multiplayer) on some Nseries smart phones like N70, N73, N80, etc. It can be downloaded from Nokia support pages and

played on any S60 device.[6]

- Snake III – A 3D version, different from Snakes. Snake III takes a more living snake approach, rather than the abstract feel of Snakes. An example of a phone with it installed is the Nokia 3250 from 2005, and it supports multiplayer modes via Bluetooth.
- Snakes Subsonic - Sequel to Snakes, released on May 22, 2008 for N-Gage 2.0.
- Snake (2017) - First released on the Nokia 3310 (2017)
- Snake (2017) - Released with Facebook Messenger (2017)

Nokia Snake was acquired by Gameloft in 2017. [7]

As per the literature review the innovative feature we are going to add in this game is it will support multi-user system (i.e.) in the same game two users can play a game at the same time.

## 3. PROBLEM STATEMENT

In this we have to create a snake game which will have many features and this game will also include multiplayer mode. This game will have single player mode as well as multiplayer mode. In these two users at a same time can play a game using keyboard and the winner will be decided on the basis of the score. This game will also include high score table that will maintain the score of players.

## 4. SYSTEM REQUIREMENTS

**SOFTWARE REQUIREMENTS: -**

- Operating system: - Windows
- Application software: - Code Blocks
- Language: - C

**HARDWARE REQUIREMENTS: -**

- Hard Disk: - 32 GB
- Ram: - 128 MB
- Processor: - Any Pentium version
- Keyboard Keys: - 104 keys

## 5. METHODOLGY

We will create different function for each functionality in the game such as for creating boundary/wall, snake movement and many more.

**Step 1: Learning Some Basic Syntax for Developing GUI**

You can add color and you can print where you want to write

You need to learn basic syntax like: -

1) gotoxy(x,y)

2) textcolour()

3) textbackground()

4) kbhit()

**Step 2: Welcome Page of the Game**

Using above select proper background and font.

Welcome the user by showing game title.

**Step 3: Selecting the Level and mode of Game.**

After displaying the game title. Show the levels and ask user to select the level and mode.
Save the level selected by user in variable and use it to increase the difficulty level of user.

**Step 4: Algorithm**

- **Food creation**: -
  In this algorithm we will use predefined function to create a random number inside the boundary. Each time a function is called it generates a random number.
- **Random function: -**
  In c program there is a random function **rand()** which is used to place the food at any point on the screen.
  Thus, use this function to place food at any point on the screen
- **Changing Direction: -**
  The direction of snake can be changed using **kbhit()** function .
  When you press the character accordingly it will change the direction of the snake.

**Step 5: Algorithm for Increasing Size of Snake and Increasing Score**

- **Increasing size of snake: -**
  When snake moves forward its size increases and when the coordinate of snake match with food coordinate then the size of snake is increased.
- **Increasing score: -**
  When snake get's the food the score of the user is also increased

**Step 6: Game over Condition:**

When snake touch the boundary of the screen. The game over will come.

This can be done by comparing the coordinate of boundary with the snake co-ordinate.

**Step 7: Quit Page**

Last step ask user if he wants to continue playing or not.

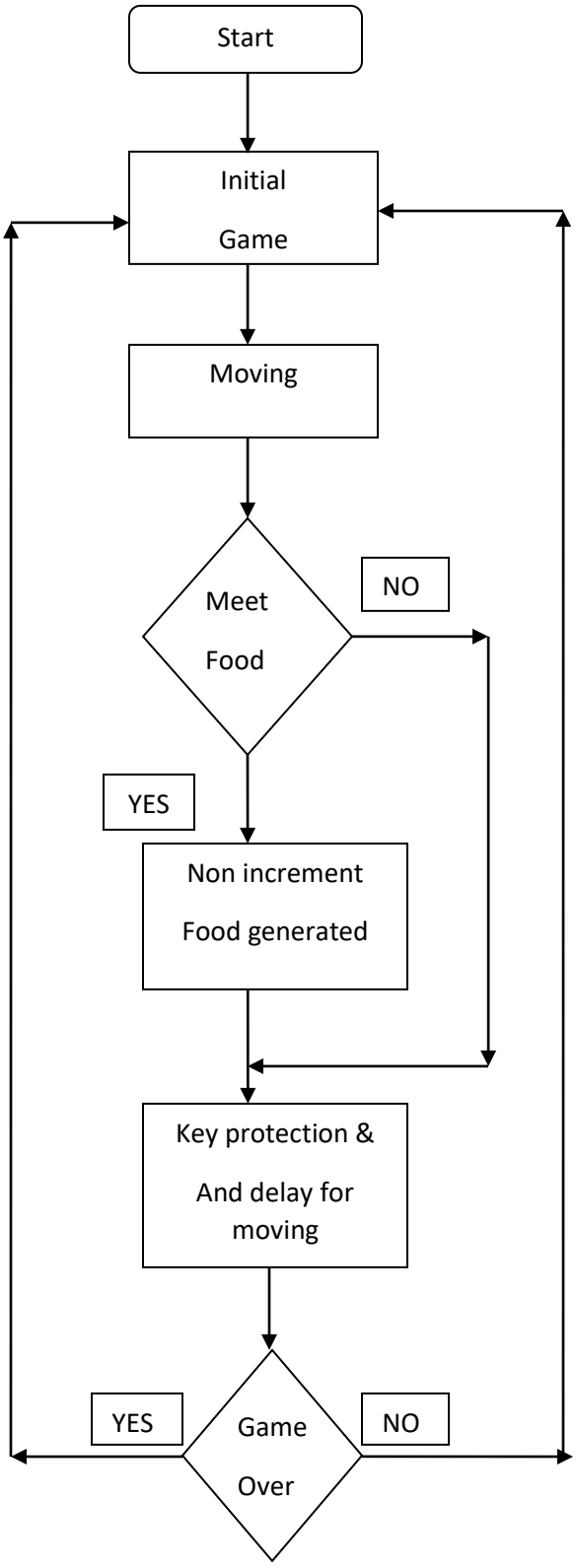


**Fig 2 Flowchart of snake's game flow**

## 6. PERT CHART

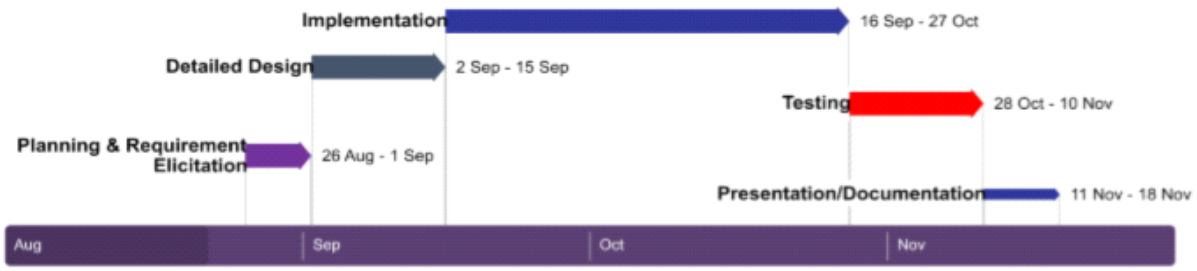


**Fig 3 Schedule**

## 7. FUTURE SCOPE OF THE PROJECT

Our project will be able to implement in future after making some changes and modifications. So, the modifications that can be done in our project are:

1. It can be made with good graphics.
2. We can add more options: -
   - Multi-player mode with computer using AI (CPU vs user)
3. We can add the speed of snake in which it is moving.

## 8. REFERENCES


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