COURSE BASED PROJECT REPORT ON

PROGRAM ON SNAKE GAME

I SEMESTER

B.E CSE (INTERNET OF THINGS WITH CYBER SECURITY INCLUDING BLOCKCHAIN TECHNOLOGY)

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SUBMITTED TO

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COMMITTED TO RESEARCH, INNOVATION AND EDUCATION 46 years

CERTIFICATE

This is to certify that the report entitled ‘**Program on Snake Game’** submitted to Chaitanya Bharathi Institute of Technology in I Sem of
B.E. in CSE (IoT with Cybersecurity including Blockchain Technology) during the Academic Year 2024-25, is a record of original work done by MUBASHIR SHAHWEZ (160124749052), SYED FAIZ AHMED BASHA (160124749056), PADE RACHIT KISHORE (160124749054) and NIKHIL JUTTUKONDA (160124749053), during the period of study in the Department of Computer Engineering & Technology, CBIT, Hyderabad.

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DECLARATION

I declare that the project entitled **“Program on Snake Game”** is being submitted by me in the Department of Computer Engineering Technology, Chaitanya Bharathi Institute of Technology (A), Osmania University.

This is a record of Bonafide work carried out by me under the guidance and supervision of **Mrs. Ch. Srilakshmi ma’am, Assistant Professor, Dept. of CET, C.B.I.T.** The content of this project is based on the knowledge and practical work I gained during the study of Database Management Systems course.

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1. INTRODUCTION

Problem Definition

Design and implement a Snake game in C programming language. The Snake game is a classic arcade-style game where you control a snake moving around the screen, eating food to grow longer. The goal is to avoid hitting the walls or your own tail while trying to achieve the highest score possible.

2.Objective

The main purpose of this problem is to create a user friendly and convenient game to play snake game.

- **Goal:** Eat food, grow longer, get points.
- **Control:** Use arrow keys to change direction.
- **Eat:** Guide snake's head to the food.
- **Avoid:** Don't hit walls or your own tail.
- **Score:** Points increase with each food eaten.
- **End:** Game over if you crash.

3.SOURCE CODE

```
#include <stdio.h>

#include <stdlib.h>

#include <conio.h>

#include <time.h>


// Game settings

#define WIDTH 20

#define HEIGHT 10


// Snake direction

int direction = 0; // 0: Right, 1: Up, 2: Left, 3: Down


// Snake coordinates

int snakeX[100], snakeY[100];

int snakeLength = 3;


// Fruit coordinates

int fruitX, fruitY;


// Score

int score = 0;
```

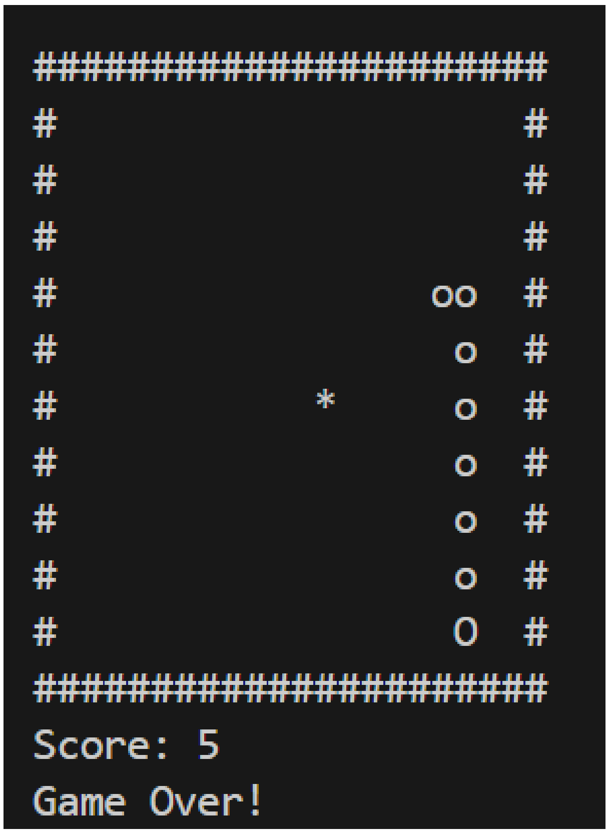
```
// Function to generate a random number within a range
int randRange(int min, int max) {
   return rand() % (max - min + 1) + min;
}

// Function to place the fruit randomly
void placeFruit() {
   fruitX = randRange(1, WIDTH - 2);
   fruitY = randRange(1, HEIGHT - 2);
}

// Function to initialize the game
void initializeGame() {
   // Initialize snake position
   snakeX[0] = WIDTH / 2;
   snakeY[0] = HEIGHT / 2;
   snakeX[1] = WIDTH / 2 - 1;
   snakeY[1] = HEIGHT / 2;
   snakeX[2] = WIDTH / 2 - 2;
   snakeY[2] = HEIGHT / 2;

   // Place the initial fruit
   placeFruit();

   // Initialize score
   score = 0;
```

```c
}

// Function to update the game state
void updateGame() {
  // Move the snake
  for (int i = snakeLength - 1; i > 0; i--) {
    snakeX[i] = snakeX[i - 1];
    snakeY[i] = snakeY[i - 1];
  }

  // Move the head based on the direction
  switch (direction) {
    case 0: snakeX[0]++; break; // Right
    case 1: snakeY[0]--; break; // Up
    case 2: snakeX[0]--; break; // Left
    case 3: snakeY[0]++; break; // Down
  }

  // Check for collisions with walls
  if (snakeX[0] < 0 || snakeX[0] >= WIDTH || snakeY[0] < 0 || snakeY[0] >= HEIGHT) {
    printf("Game Over!\n");
    exit(0);
  }

  // Check for collisions with itself
  for (int i = 1; i < snakeLength; i++) {
        if (snakeX[0] == snakeX[i] && snakeY[0] == snakeY[i]) {
            printf("Game Over!\n");
            exit(0);
        }
    }

    // Check if the snake ate the fruit
    if (snakeX[0] == fruitX && snakeY[0] == fruitY) {
        score++;
        snakeLength++;
        placeFruit();
    }
}

// Function to draw the game
void drawGame() {
    system("cls"); // Clear the console

    // Draw the top border
    for (int i = 0; i < WIDTH + 2; i++) {
        printf("#");
    }
    printf("\n");

    // Draw the game area
    for (int y = 0; y < HEIGHT; y++) {
```

```
    printf("#"); // Left border
    for (int x = 0; x < WIDTH; x++) {
      if (x == snakeX[0] && y == snakeY[0]) {
        printf("O"); // Snake head
      } else {
        int isSnakePart = 0;
        for (int i = 1; i < snakeLength; i++) {
          if (x == snakeX[i] && y == snakeY[i]) {
            printf("o"); // Snake body
            isSnakePart = 1;
            break;
          }
        }
        if (!isSnakePart) {
          if (x == fruitX && y == fruitY) {
            printf("*"); // Fruit
          } else {
            printf(" "); // Empty space
          }
        }
      }
    }
    printf("#\n"); // Right border
  }

  // Draw the bottom border
```

```
    for (int i = 0; i < WIDTH + 2; i++) {
        printf("#");
    }
    printf("\n");

    // Print the score
    printf("Score: %d\n", score);
}

int main() {
    // Initialize random number generator
    srand(time(NULL));

    // Initialize the game
    initializeGame();

    // Game loop
    while (1) {
        // Draw the game
        drawGame();

        // Handle user input
        if (_kbhit()) {
            switch (_getch()) {
                case 'w': if (direction != 3) direction = 1; break; // Up (avoid going opposite)
                case 's': if (direction != 1) direction = 3; break; // Down
            case 'a': if (direction != 0) direction = 2; break; // Left

            case 'd': if (direction != 2) direction = 0; break; // Right

            case 'x': exit(0); // Exit the game

          }

        }


        // Update the game state

        updateGame();


        // Add a small delay to control game speed

        usleep(100000); // 100 milliseconds

    }


    return 0;

}
```

4. OUTPUT



```
######################
#                    #
#                    #
#                    #
#                oo  #
#                 o  #
#           *     o  #
#                 o  #
#                 o  #
#                 o  #
#                 O  #
######################
Score: 5
Game Over!
```

5. CONCLUSION

This project successfully implemented a classic Snake game using the C programming language. The game includes core features such as snake movement, fruit consumption, collision detection, and a scoring system. While developing the game, challenges such as optimizing game speed and ensuring smooth controls were addressed. Future enhancements could include adding obstacles, power-ups, and levels to increase complexity and player engagement. Overall, this project provided valuable experience in game development and programming, and the resulting Snake game offers an enjoyable and nostalgic gaming experience.

6. REFERENCES

1.Snake Game in C without using Graphics - Sanfoundry

2.Snake Game in C - GeeksforGeeks

3.Snake Game with C - Stack Overflow