



SHAPE RECOGNITION GAME WITH SCORE

A PROJECT REPORT

Submitted by

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in partial fulfillment of requirements for the award of the course

MGB1201 - PYTHON PROGRAMMING

in

DEPARTMENT OF MECHANICAL ENGINEERING

K. RAMAKRISHNAN COLLEGE OF ENGINEERING

**(Autonomous Institution, affiliated to Anna University Chennai and Approved
by AICTE, New Delhi)**

SAMAYAPURAM – 621 112

DECEMBER - 2024



K. RAMAKRISHNAN COLLEGE OF ENGINEERING

(Autonomous Institution affiliated to Anna University, Chennai)

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BONAFIDE CERTIFICATE

Certified that this project report on “**SHAPE RECOGNITION GAME WITH SCORE**” is the bonafide work of **VISHVA P(8115U23ME060)** who carried out the project work during the academic year 2024 - 2025 under my supervision.

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Submitted for the End Semester Examination held on.....

INTERNAL EXAMINER

EXTERNAL EXAMINER



DECLARATION

I declare that the project report on **“SHAPE RECOGNITION GAME WITH SCORE ”** is the result of original work done by us and best of our knowledge, similar work has not been submitted to **“ANNA UNIVERSITY CHENNAI”** for the requirement of Degree of **BACHELOR OF ENGINEERING**. This project report is submitted on the partial fulfilment of the requirement of the completion of the course **MGB1201 – PYTHON PROGRAMMING**

Signature

VISHVA P

Place: Samayapuram

Date:



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VISION OF THE INSTITUTION

To achieve a prominent position among the top technical institutions

MISSION OF THE INSTITUTION

M1: To bestow standard technical education par excellence through state of the art

infrastructure, competent faculty and high ethical standards.

M2: To nurture research and entrepreneurial skills among students in cutting edge technologies.

M3: To provide education for developing high-quality professionals to transform the society.

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To create eminent professionals of Computer Science and Engineering by imparting quality education.

MISSION OF THE DEPARTMENT

M1: To provide technical exposure in the field of Computer Science and Engineering through state of the art infrastructure and ethical standards.

M2: To engage the students in research and development activities in the field of Computer Science and Engineering.

M3: To empower the learners to involve in industrial and multi-disciplinary projects for addressing the societal needs.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

Our graduates shall

PEO1: Analyse, design and create innovative products for addressing social needs.

PEO2: Equip themselves for employability, higher studies and research.

PEO3: Nurture the leadership qualities and entrepreneurial skills for their successful career.



PROGRAM OUTCOMES

Engineering students will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write



11. effective reports and design documentation, make effective presentations, and give and receive clear instructions.
12. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
13. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- ☐ **PSO1:** Apply the basic and advanced knowledge in developing software, hardware and firmware solutions addressing real life problems.
- ☐ **PSO2:** Design, develop, test and implement product-based solutions for their career enhancement.



ABSTRACT

This project introduces an interactive Shape Recognition Game designed to enhance cognitive skills, spatial awareness, and pattern recognition abilities. The game focuses on identifying and categorizing various geometric shapes through visual stimuli while maintaining a dynamic and engaging user experience. The game involves a structured series of challenges, each requiring players to recognize, select, or match shapes based on their properties (e.g., size, color, number of sides). A scoring mechanism is integrated to track performance, rewarding accuracy and speed while deducting points for errors or delays.



ABSTRACT WITH POs AND PSOs MAPPING

ABSTRACT	POs MAPPED	PSOs MAPPED
<p>The Shape Recognition Game with Score is a Python-based interactive game designed to test and improve players' ability to recognize shapes and respond quickly. Built using the pygame library, the game displays randomized shapes (e.g., circles, squares, triangles) and challenges players to identify them by pressing corresponding keys.</p>	PO1,PO2, PO3,PO12	PS01

Note: 1- Low, 2-Medium, 3- High

SUPERVISORHEAD OF THE DEPARTMENT



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CHAPTER 1

INTRODUCTION

1.1 Objective

This project introduces an interactive Shape Recognition Game designed to enhance cognitive skills, spatial awareness, and pattern recognition abilities. The game focuses on identifying and categorizing various geometric shapes through visual stimuli while maintaining a dynamic and engaging user experience.

The game involves a structured series of challenges, each requiring players to recognize, select, or match shapes based on their properties (e.g., size, color, number of sides). A scoring mechanism is integrated to track performance, rewarding accuracy and speed while deducting points for errors or delays.

1.2 Overview

A The Shape Recognition Game with Score is an educational and entertaining game designed to improve players' ability to identify and differentiate geometric shapes. Players are presented with various shapes and must recognize and select them within a given time frame or under specific conditions. This game combines learning and fun, making it an engaging way to sharpen shape recognition skills for players of all ages.



1.3 Python Programming Concepts

The game is designed to recognize shapes and maintain a score, incorporating key programming concepts like loops, conditionals, and randomization. Below is the structured concept with details about how the program will function.

Program Structure and Flow:

- 1. Setup:** Import necessary modules (random for randomness, turtle for drawing shapes).
- 2. Game Loop:** Use a for or while loop to run the game for multiple rounds. Each round: Randomly select a shape, Display the shape, Prompt the player for input, Compare the player's input with the correct shape name. Update the score based on the result.
- 3. Scoring System:** Use a variable to track the score, starting at 0. Increment or decrement the score based on the player's answer. Optionally, add bonuses for speed or deduct penalties for repeated wrong answers.
- 4. Conditionals:** Use if and else statements to validate the player's input and provide feedback (e.g., correct/incorrect).
- 5. Game End:** After the loop, display the final score. Optionally, allow the player to restart the game or exit.



CHAPTER 2

PROJECT METHODOLOGY

2.1)Proposed Work

The Shape Recognition Game with Score is a simple Python-based game where the player guesses the shape that is displayed on the screen. The goal of this game is to recognize basic shapes and earn points based on correct guesses.

The main objectives of this project are:Display random shapes (circle, square, triangle).Ask the player to identify the shape.

Methodology;The project involves the following key steps:

Game Setup;Use the turtle module to draw shapes on the screen.

The shapes displayed will be limited to simple ones like circle, the Project.

1.Shape Drawing:The draw_shape() function uses the turtle module to draw the shapes (circle, square, triangle).

2.User Input Handling:The player is prompted to guess the shape, and the input is checked against valid shapes.

3.Scoring and Feedback:If the guess is correct, the player earns 10 points; if wrong, they lose 5 points.

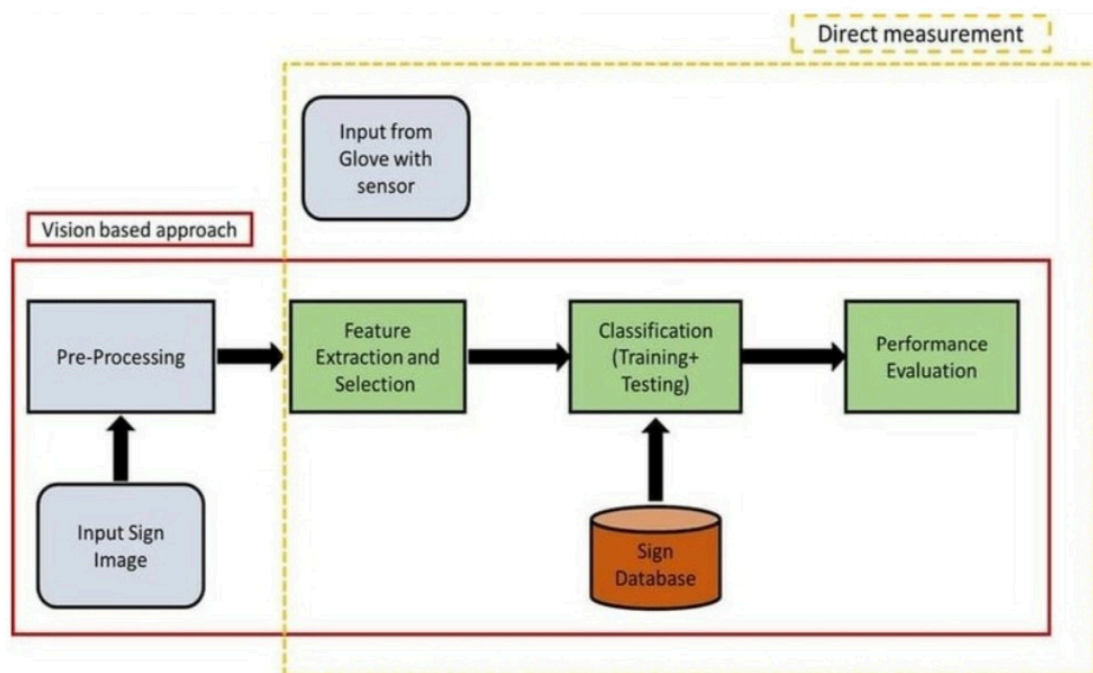
4.Game Loop:The game runs for 5 rounds. After each round, the score is updated and displayed.

5.End of Game:After all rounds, the player's final score is shown

This Shape Recognition Game with Score is a simple, fun, and educational project.

It helps players practice shape recognition and interact with a basic Python game.

2.2 Block Diagram





CHAPTER 3

MODULE DESCRIPTION

3.1 Module 1 : DRAW SHAPE

Function Name: `draw_shape(shape, color):`

Description: The draw_shape function is responsible for rendering a specific geometric shape (e.g., circle, square, triangle, on rectangle) on the game screen in the specified color. This is a core function in the Shape Recognition Game, as it visually presents player to identify.

Steps:

1. Show random shapes (circle, square, triangle, rectangle).
2. Allow the player to press a key to identify the shape.
3. Update the player's score based on whether the answer is correct or not.
4. Track expenses by charging the player a fixed amount each round and adding penalties for incorrect answers.

Display both the score and expenses on the screen.



3.3 Module 2 : PLAY GAME INPUT

Function Name; handle_input(current_shape):

Description:- ThisThe handle_input function processes the player's keyboard input and determines if it matches the currently displayed shape. It is a critical function in the Shape Recognition Game for validating the player's response.

Steps:

1. Get Player Input: Use `pygame.key.get_pressed()` to check which key the player pressed.
2. Check the Current Shape: Match the `current_shape` (e.g., 'circle', 'square', 'triangle', 'rectangle') against the shape displayed on the screen.
3. Verify the Key Press: Compare the player's input with the correct key for the shape:
► C Circle ► S → Square ► T → Triangle ► R Rectangle
4. Return Result: If the player's input matches the shape, return `True`. Otherwise, return `False`.



3.3 Module 3 : DISPLAY SCORE

Function Name : 'display_score()':

Description:- The display_score function displays the player's current score on the game screen in real time. This provides continuous feedback to the player, enhancing engagement and tracking progress.

Steps:

1. Fetch the Score:

- Retrieve the current score from a global or shared variable.

2. Set Font and Style:

- Define the font size and style for the score text.

3. Render the Text:

- Convert the score into an image (text surface) using the font object.

4. Position the Score:

- Decide where the score should appear on the screen (e.g., top-left corner).

5. Draw the Score:

- Use the blit() method to place the score text on the screen.

6. Refresh the Screen:

Ensure the score is updated in real-time by refreshing the game screen.



CHAPTER 4

RESULTS AND DISCUSSION

PROGRAM

```
1 import random
2 def generate_shape():
3     shapes = ['circle', 'square', 'triangle']
4     return random.choice(shapes)
5 def play_game():
6     score = 0
7     total_attempts = 0
8     while True:
9         shape = generate_shape()
10        guess = input("Guess the shape (circle, square, triangle):").lower()
11        total_attempts += 1
12        if guess == shape:
13            print("Correct!")
14            score += 1
15        else:
16            print(f"Wrong! The shape was {shape}.")
17            play_again = input("Do you want to play again? (yes/no):").lower()
18            if play_again != 'yes':
19                break
20            print(f"Your final score is {score}/{total_attempts}.")
21        if __name__ == "__main__":
22            print("Shape Recognition Game")
23            play_game()
```



OUTPUT

```
$ python CT928132.py
Shape Recognition Game
Guess the shape (circle, square, triangle):
circle
Wrong! The shape was square.
Do you want to play again? (yes/no): yes
Guess the shape (circle, square, triangle):
triangle
Correct!
Guess the shape (circle, square, triangle):
circle
Wrong! The shape was triangle.
Do you want to play again? (yes/no): no
Your final score is 1/3.
==== YOUR PROGRAM HAS ENDED ====
```

```
Shape Recognition Game
Guess the shape (circle, square,
triangle): circle
Correct!
Do you want to play again? (yes/no):
yes
Guess the shape (circle, square,
triangle): square
Wrong! The shape was circle.
Do you want to play again? (yes/no):
yes
Guess the shape (circle, square,
triangle): triangle
Correct!
Do you want to play again? (yes/no):
no
Your final score is 1/3.
```



CHAPTER 5

CONCLUSION

Shape Recognition Game with Score in Python. The Shape Recognition Game with Score is an interactive and educational Python program designed to test and enhance the player's shape recognition and response skills. Built using Python's pygame library, it provides a simple yet engaging gameplay experience by combining dynamic visuals, user interaction, and real-time feedback.



REFERENCES:

1.Managing Scores

- Using Text in Pygame:
- Learn how to render and display text (e.g., score) on the screen.
- Example: `pygame.font.Font` and `render()`.

2. Example Projects

- Open Source Pygame Projects:
- Explore GitHub repositories for similar projects to understand structure and implementation.
- Link: [GitHub - Pygame Projects](#)



APPENDIX

(Coding)

```
import random

# Function to generate a random shape

def generate_shape():

    shapes = ['circle', 'square', 'triangle']

    return random.choice(shapes)

# Main game logic

def play_game():

    score = 0

    total_attempts = 0

    while True:

        # Generate a random shape

        shape = generate_shape()

        # Ask the player to guess the shape

        guess = input("Guess the shape (circle, square, triangle): ").lower()

        total_attempts += 1

        if guess == shape:

            print("Correct!")

            score += 1
```



else:

```
print(f"Wrong! The shape was {shape}.")
```

```
# Ask if the player wants to play again
```

```
play_again = input("Do you want to play again? (yes/no): ").lower()
```

```
if play_again != 'yes':
```

```
    break
```

```
# Display the final score
```

```
print(f"Your final score is {score}/{total_attempts}.")
```

```
# Entry point of the program
```

```
if __name__ == "__main__":
```

```
    print("Shape Recognition Game")
```

```
    play_game()
```



APPENDIX

(Output)

Shape Recognition Game

Guess the shape (circle,square,triangle);