Project Report

Interactive Rectangle and Point Representation using Python

Objective:

To create an interactive Python-based application that allows users to visually and computationally interact with geometric shapes. The project enables users to guess if a point falls within a randomly generated rectangle and calculates how accurate their area estimation is.

Key Features:

1. Point and Rectangle Classes:
- Encapsulation of geometric properties.
- Functions to check relationships between points and rectangles.

2. Graphical Visualization:
- Representation of rectangles and points using the Turtle graphics module.
- Interactive dot placement and rectangle drawing.

3. User Interaction:
- Randomized rectangle generation.
- User input for guessing coordinates and rectangle area.
- Feedback on accuracy and correctness.

Technical Stack:

- Language: Python
- Libraries Used: turtle, random

Outcomes:

This project aims to demonstrate concepts of object-oriented programming (OOP), graphical representation, and user interaction in Python. It also reinforces mathematical reasoning by integrating basic geometry concepts.