# Project Proposal

## 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.