**Title:**  
Digital Steganography Using Object-Oriented Programming

**Abstract:**

**Introduction:**  
Digital steganography is a technique used to conceal information within digital media (e.g., images, audio, and video), ensuring that the existence of the hidden message is not easily detectable. This project focuses on implementing an image-based steganography system using object-oriented programming (OOP) principles.

**Objective:**  
The main objective of this project is to design and develop a digital steganography system that allows secure embedding and extraction of secret messages within image files using OOP concepts. The project also aims to demonstrate how OOP features such as encapsulation, inheritance, and polymorphism can be utilized to create a modular and extensible system.

**Methodology:**  
The system uses the Least Significant Bit (LSB) algorithm for embedding data within image pixels, as it allows lossless insertion of information while maintaining the image's visual quality. The software is developed using Java, adhering to OOP principles to ensure scalability and code reusability. The system will support popular image formats like PNG and BMP. Additionally, basic encryption techniques are applied to enhance security.

**Results:**  
The project successfully implements a steganography tool that allows users to encode and decode hidden messages within images. The visual quality of the stego image remains unaffected, and the hidden information can only be extracted by authorized users. The use of OOP principles ensures that the system is easy to maintain and extend for future functionalities.

**Conclusion:**  
This project demonstrates how OOP principles can be effectively applied to create a digital steganography system. It highlights the integration of theoretical concepts in security and programming to solve real-world problems. The system provides a secure and efficient solution for embedding hidden messages in images.