

CSCI 188 Project Proposal

“Hide It!”

September 27, 2012

Samar Alsaleh

Project Abstract

“Hide It!” is an application that allows hidden communication by the use of Steganography. Steganography, which means concealed writing, is the art and science of writing hidden messages in such a way that no one, apart from the sender and intended recipient, suspects the existence of the message; a form of security through obscurity. “Hide It!” will allow users to hide secret messages within images taken by the iPhone camera or chosen from the iPhone photo gallery. The image can then be stored on the iPhone photo gallery, iMessaged, or emailed. Anyone viewing the photo will just see a plain innocent picture, while only intended recipients will know the secrets that lie within. For enhanced security, users can place a password on the hidden contents of the image to further hide the secret.

Strategy

I intend to develop “Hide It!” application for iPhone mobile platform. The development will be done using iOS SDK 6.0. The frameworks I intend to use are:

- **UIKit Framework** – for user interface creation and management, camera and photo library interaction, and touch screen gesture recognition.
- **Message UI Framework** – for composing and sending email messages from within the application.
- **Assets Library Framework** - for locating and retrieving photo files located on the iPhone device.
- **Image I/O Framework and Core Image Framework** – for image processing and manipulation.

More frameworks may be used as needed.

Unknowns & Problems

Since this is my first iPhone app, I am still not familiar with much of iOS development. But, I am very excited about it and I am eager to learn, explore and research in order to finish this project successfully. The major challenge, I believe, in developing this application is to embed data into a JPEG image format which is mostly used on iPhone. JPEG is a lossy compressed format, i.e. it provides a “close” approximation of the original image, but not exactly the same image. Hence, the approximation introduced by the JPEG compression could destroy a secret directly embedded into the raw bitmap. Some steganographic algorithms are designed to embed a secret into a JPEG image, such as, Jsteg, F5, and Outguess. Due to no experience in iPhone development, trying to figure

out the classes and frameworks needed to implement these algorithms will be a challenging task. I first need to familiarize with these algorithms and determine which is more applicable for my purpose.

Implementation Plan

The following are the features I plan to implement:

- Select any picture from the clipboard, device photo library, or from the camera to hide a secret message inside.
- Compose a message to hide inside of the image.
- Secure the secret message with a password.
- Save the created secret image inside of the device photo gallery.
- Share the secret by sending the created image through email or iMessage.
- The recipients can use the app to view the hidden message.

I plan on doing most of my initial development on iPhone simulator and move these to physical devices as the project matures.

Below is a rough sketch of the major parts of the user interface and the flow of the application:

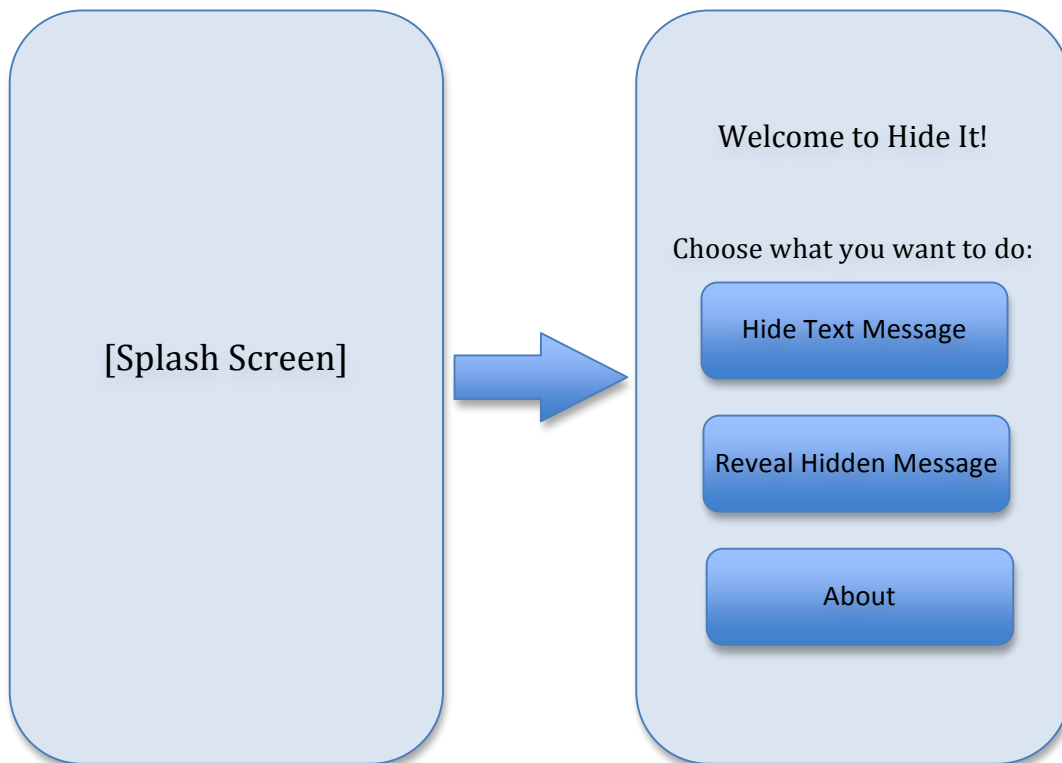


Figure 1: Main Screen

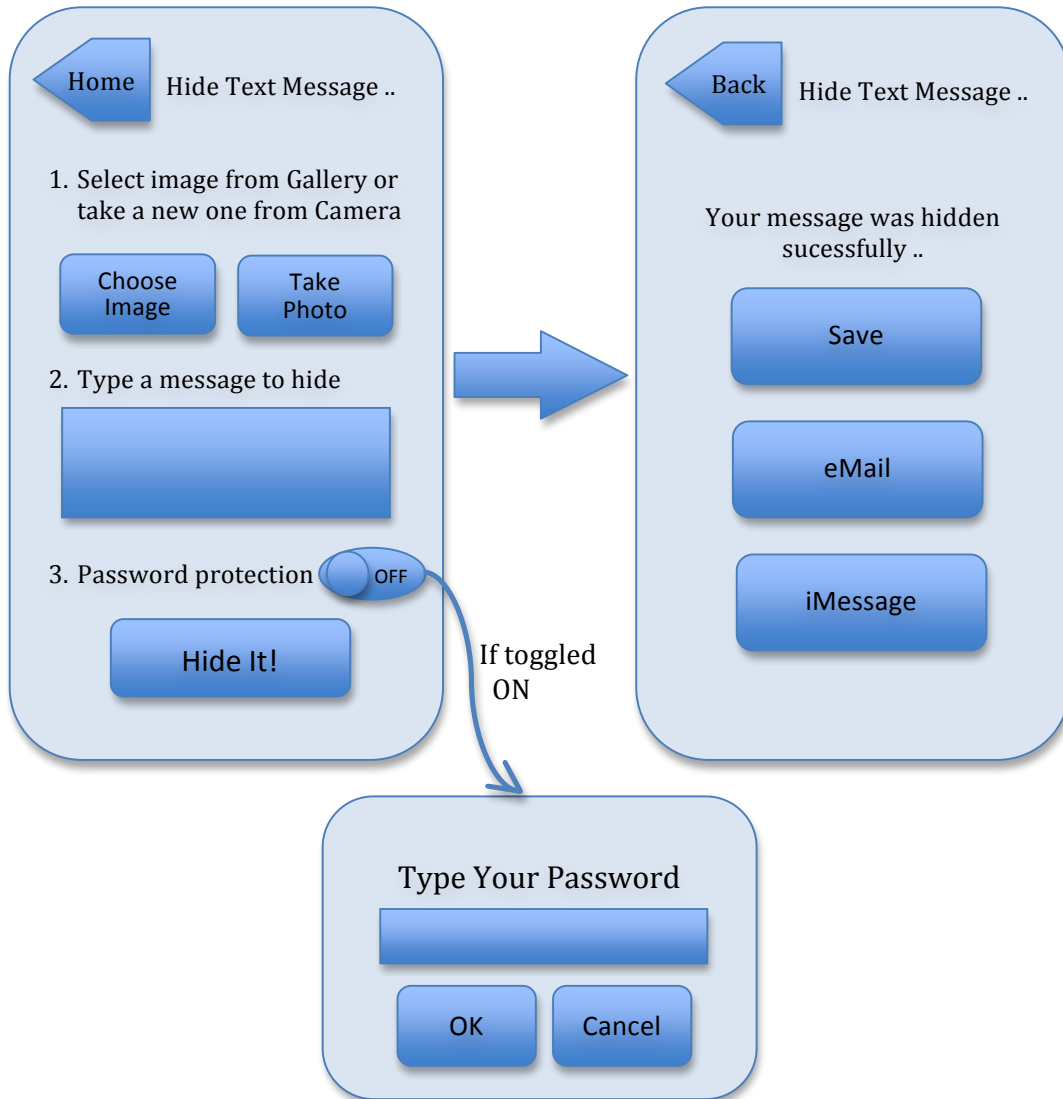


Figure 2: Hide Text Message

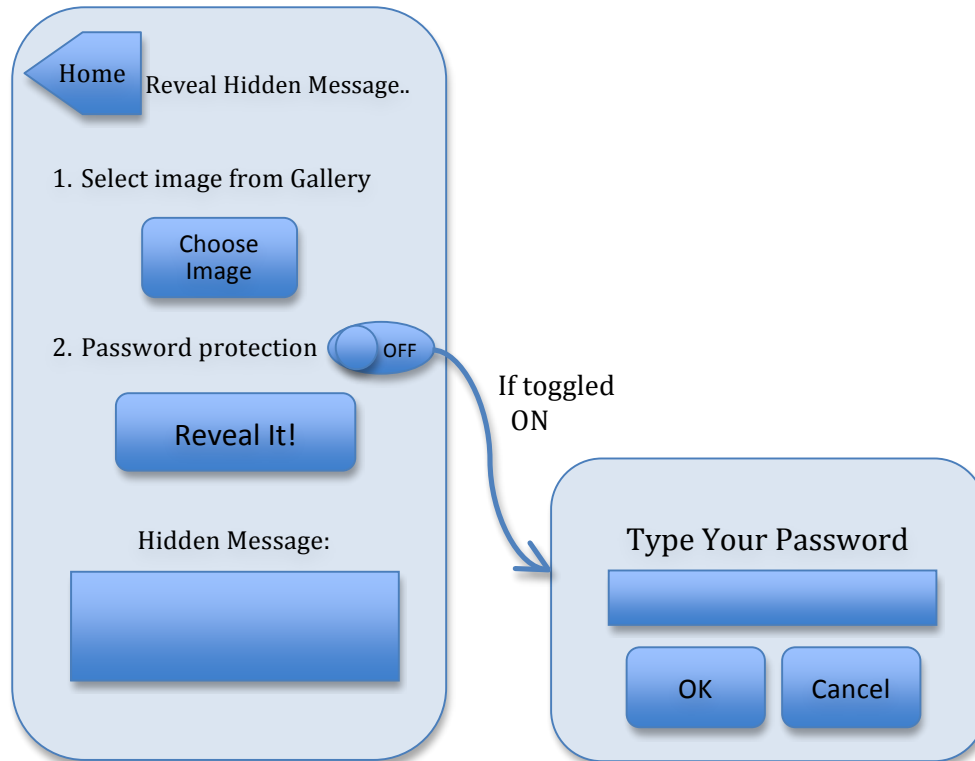


Figure 3: Reveal Hidden Message

Demo Plan

For the in-class demo, I am considering two options; one is recording a short video showing the ideal flow of the app. The other is using my iPhone to demonstrate the use of the app. I will determine which is more appropriate as the application matures.