Capture Me:Identifying and Characterizing Photo Screenshot Privacy in Social Media Apps

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Abstract— Social networking apps offer a straightforward way for people to have a simple social presence through web. They provide a virtual environment for people to share each and every activity, their interests, and their circle of acquaintance with their family, friends, or even the unknown. With so much sharing, hackers, attackers, kidnappers and thieves have found very easy ways to steal personal information through these networking apps. In this paper, we will discuss a main and security breach and its respective prevention techniques. In this paper we propose an application for secure exchange of photos and profile safety between users. This architecture improves the customization of profiles.

I. INTRODUCTION

Social networks are one of the easiest forms of communication these days. They reflect the social image of a person. They can keep you glued to your *avatar* for hours together and make you forget about the whole physical world around you. The network of social relations that build up during your everyday life can be simply translated onto your "*profile*" and made available for the whole of your friends to see. Then there is a concept of *"followers"*/ "*following"* that can turn a nomad into a rock star. The world of pictures you share *live* has only made your presence felt more. It all seems so entertaining that one would seldom think of leaving this "world" and becoming an offline monk. But the more comfortable and attached we become with these apps, the more casual and careless we are to share personal details about ourselves. Even though the use of social network and applications is increasing day by day but users are not aware of the risks associated with uploading sensitive information.[6] The reason why cyber-conspirators prey on these networks is because users upload their personal information that commonly include their interests, social relationships, pictures, confidential information and other media content, and share this information to the whole world which are very easily accessible. The volume and ease of accessibility of personal information available on these app have attracted malicious people who seek to exploit this information. [4][6]

We are working on securing photograph as well as profile because they are more prone to misuse and murphy. Now a day's number of kidnapping and threatening cases countered are due to lack of security provided to the originator of the message, people on the other end copy or take a screenshot of the same and take undue advantage for the same.[6]

II. PREVAILING SOCIAL APP

Snapchat

Snapchat is an image messaging and multimedia mobile application created by Evan Spiegel, Bobby Murphy, and Reggie Brown, former students at Stanford University, and developed by Snap Inc., originally Snapchat Inc. One of the principal concepts of Snapchat is that pictures and messages are only available for a short time before they become inaccessible. Originally, Snapchat was centered on private, person-to-person photo sharing. New features, including the ability to send short videos, communicate via video chat, and saving necessary chat information through a press on a message, were added through later updates. Snapchat, introduced a "My Story" feature, letting users compile images, known as "snaps", into chronological storylines accessible to all of their friends.

Snapchat provides us with some interesting security features like screenshot detection. It basically notifies the user if somebody takes a screenshot of its "snap". It only notifies about the name of the user who has taken the screenshot and does not tell the user about the date and time at which the screenshot has been taken.[1]

Facebook

Facebook is an American online social media and social networking service based in Menlo Park, California. The

Facebook website was launched on February 4, 2004, by Mark Zuckerberg, along with fellow Harvard College students and roommates, Eduardo Saverin, Andrew McCollum, Dustin Moskovitz, and Chris Hughes.

Facebook was initially limited for membership to Harvard students only. However, later the founders expanded it to higher education institutions in the Boston area, the Ivy League schools, and Stanford University. They gradually added support for students studying at various other universities, and eventually to high school students as well. From 2006, anyone who is at least 13 years old is allowed to become a registered user of Facebook, though variations exist in the minimum age requirement, depending on applicable local laws. It can be accessed by a large number of devices such as desktop, laptop, tablet, mobile phones etc. After registering to use the site, users can create a customized profile indicating their name, occupation, schools attended and so on. Users can add other users as "friends", exchange messages, post status updates, share photos, videos and links, use various software applications ("apps"), and receive notifications of activity. Additionally, users may join common-interest user groups organized by workplace, school, hobbies or other topics, and categorize their friends into lists such as "People From Work" or "Close Friends". Additionally, users can complain about or block unpleasant people. Facebook makes most of its revenue from advertisements which appear onscreen.

It has more than 2 billion monthly active users as of June 2017. Its popularity has led to prominent media coverage for the company, including significant scrutiny over privacy and the psychological effects it has on users. In recent years, the company has faced intense pressure over the amount of fake news, hate speech and violence prevalent on its services, all of which it is attempting to counteract.[2]

WhatsApp

WhatsApp Messenger is a freeware and cross-platform instant messaging and Voice over IP (VoIP) service. The application allows the sending of text messages and voice calls, as well as video calls, images and other media, documents, and user location. The application runs from a mobile device though it is also accessible from desktop computers; the service uses standard cellular mobile numbers. Originally users could only communicate with other users individually or in groups of individual users, but in September 2017 WhatsApp announced a forthcoming business platform which will enable companies to provide customer service to users at scale. All data is end-to-end encrypted. The client was created by WhatsApp Inc., based in Mountain View, California, which was acquired by Facebook in February 2014 for approximately US$19.3 billion.[5] By February 2016, WhatsApp had a user base of over one billion, making it the most popular messaging application at the time. WhatsApp has grown in multiple countries, including Brazil, India, and large parts of Europe.[1][5]
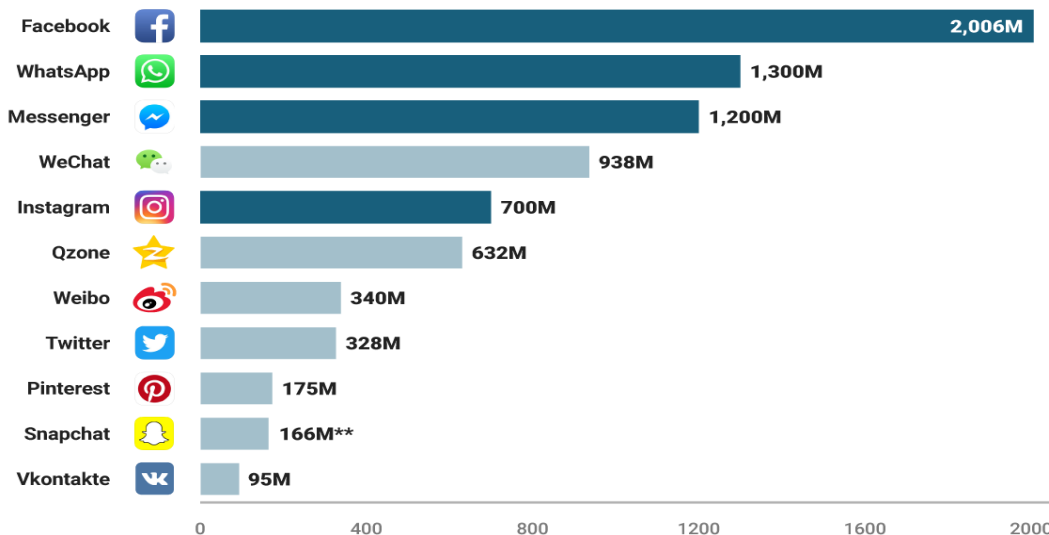
Instagram

Instagram is a mobile, desktop, and Internet-based photo-sharing application and service that allows users to share pictures and videos either publicly, or privately to pre-approved followers. It was created by Kevin Systrom and Mike Krieger, and launched in October 2010 as a free mobile app exclusively for the iOS operating system. A version for Android devices was released two years later, in April 2012, followed by a feature-limited website interface in November 2012, and apps for Windows 10 Mobile and Windows 10 in April 2016 and October 2016 respectively.[5]

Instagram lets registered users upload photos or videos to the service. Users can apply various digital filters to their images, and add locations through geotags. They can add hashtags to their posts, linking the photos up to other content on Instagram featuring the same subject or overall topic. Users can connect their Instagram account to other social media profiles, enabling them to share photos to those profiles as well. Originally, a distinctive feature of Instagram was its confining of photos to a square; this was changed in August 2015, when an update started allowing users to upload media at full size. In June 2012, an "Explore" tab was introduced, showing users a variety of media, including popular photos and photos taken at nearby locations, trending tags and places, channels for recommended videos, and curated content. Support for videos was originally launched in June 2013, and had a 15-second maximum duration and limited quality, with Instagram later adding support for widescreen and longer videos. Private messaging, called Instagram Direct, was launched with basic photo-sharing functionality in December 2013, and has gradually received major updates incorporating more features, most notably text support and "disappearing" photos. In August 2016, Instagram introduced a "Stories" feature, letting users add photos to a 24-hour temporary story, with subsequent updates adding virtual stickers and augmented reality objects.[2]

III.   COMPARISON OF PREVAILING APPS

FACEBOOK DOMINATES THE SOCIAL MEDIA LANDSCAPE

Monthly active users of selected social networks and messaging services*

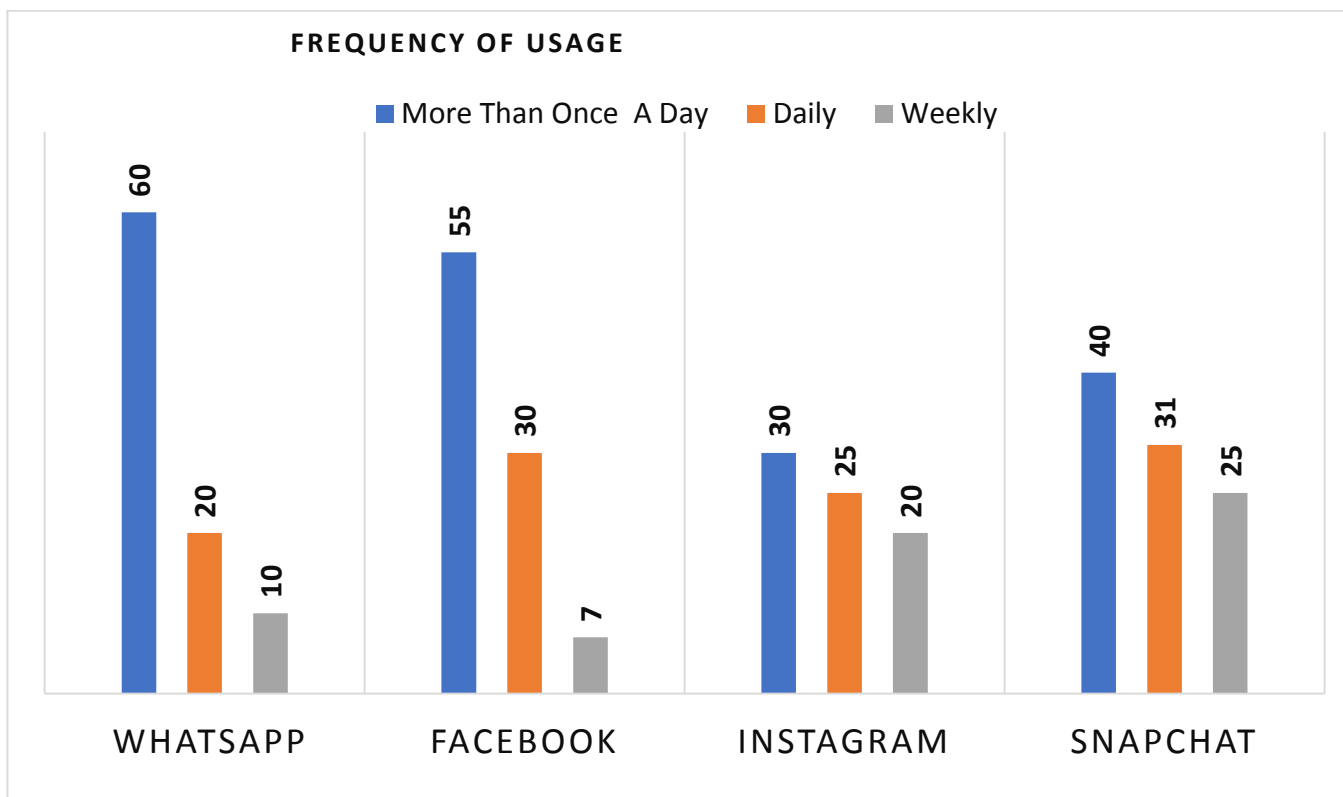|	
Facebook	2,006M
WhatsApp	1,300M
Messenger	1,200M
WeChat	938M
Instagram	700M
Qzone	632M
Weibo	340M
Twitter	328M
Pinterest	175M
Snapchat	166M**
Vkontakte	95M

0   400   800   1200   1600   2000

SOURCE: Company data   *Latest data (Dec '16—Jul '17)   **Daily active users   statista | BUSINESS INSIDER

APPLICATION	TWO WAY OPT IN	END TO END ENCRYPTION	TEMPORARY IMAGE CONCEPT	TEMPORARY TEXT CONCEPT	PROFILE GAURD	TIME LIMITED SHARING	CONCEPT OF NOTIFYING THE ORGINATO-R ABOUT ANY SCREENSH-OT ACTIVITY	LOCATION SERVICE
WHATSAPP[1]	✓	✓	✗	✗	✗	✗	✗	✓
FACEBOOK[1]	✓	✓	✗	✗	✓	✗	✗	✓
INSTAGRAM[2]	✓	✓	✗	✗	✗	✗	✗	✓

(Instagram)								
SNAPCHAT[1]	✗	✓	✓	✓	✓	✓	✓	✗
HIKE	✓	✓	✗	✗	✗	✗	✗	✓

FREQUENCY OF USAGE

■ More Than Once A Day   ■ Daily   ■ Weekly

|	More Than Once A Day	Daily	Weekly
WHATSAPP	60	20	10
FACEBOOK	55	30	7
INSTAGRAM	30	25	20
SNAPCHAT	40	31	25

IV. PROPOSED APPLICATION

PROPOSED APPLICATION IDEA

As discussed earlier, we are concentrating on a secure way of sharing photographs and profile via android application. We have designed an application in which the feature of notifying the originator of the profile about any screenshot activity that has taken place.

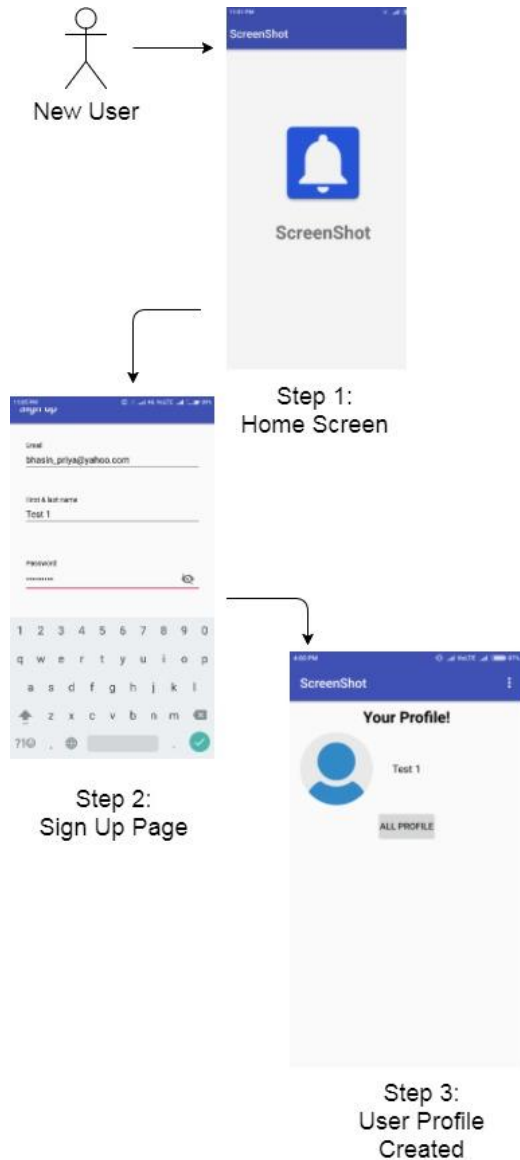The app is deployed on fire base so that it can work on multiple phones.
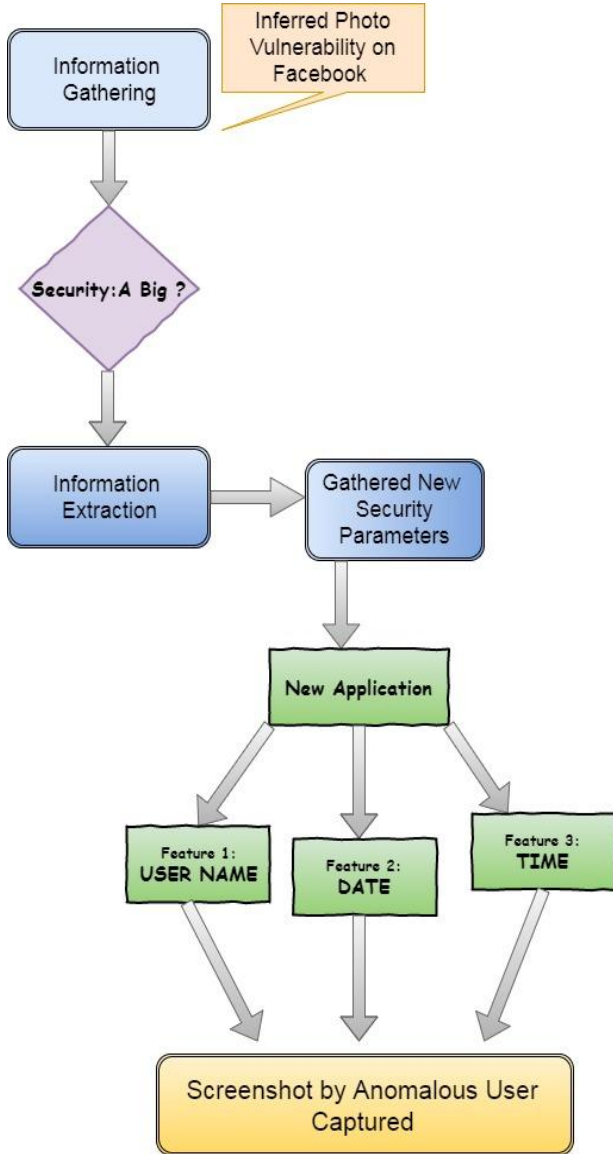
PROPOSED APPLICATION WORKING
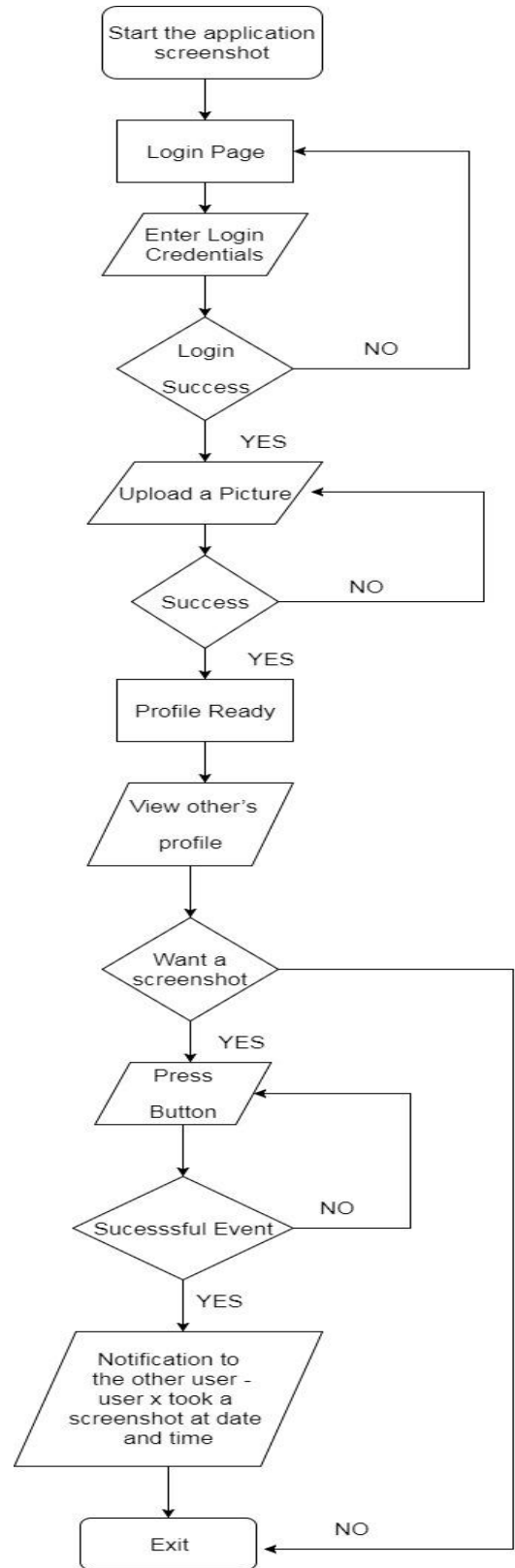
Basic idea of the application revolves around the user profile safety where in user 'x' has a profile with a photograph and when user 'y' tries and open the same application on his/her phone and views user 'x' profile and take the screenshot of the same, then the originator user 'x' gets notified that user 'y' has taken a screenshot as follows:

"User name has taken a screenshot at Date and Time".

SIGN UP WORKING

Step 1:
Home Screen

Step 2:
Sign Up Page

Step 3:
User Profile
Created

Here, a new user tries to create an account /profile for the same following steps are needed to be followed:
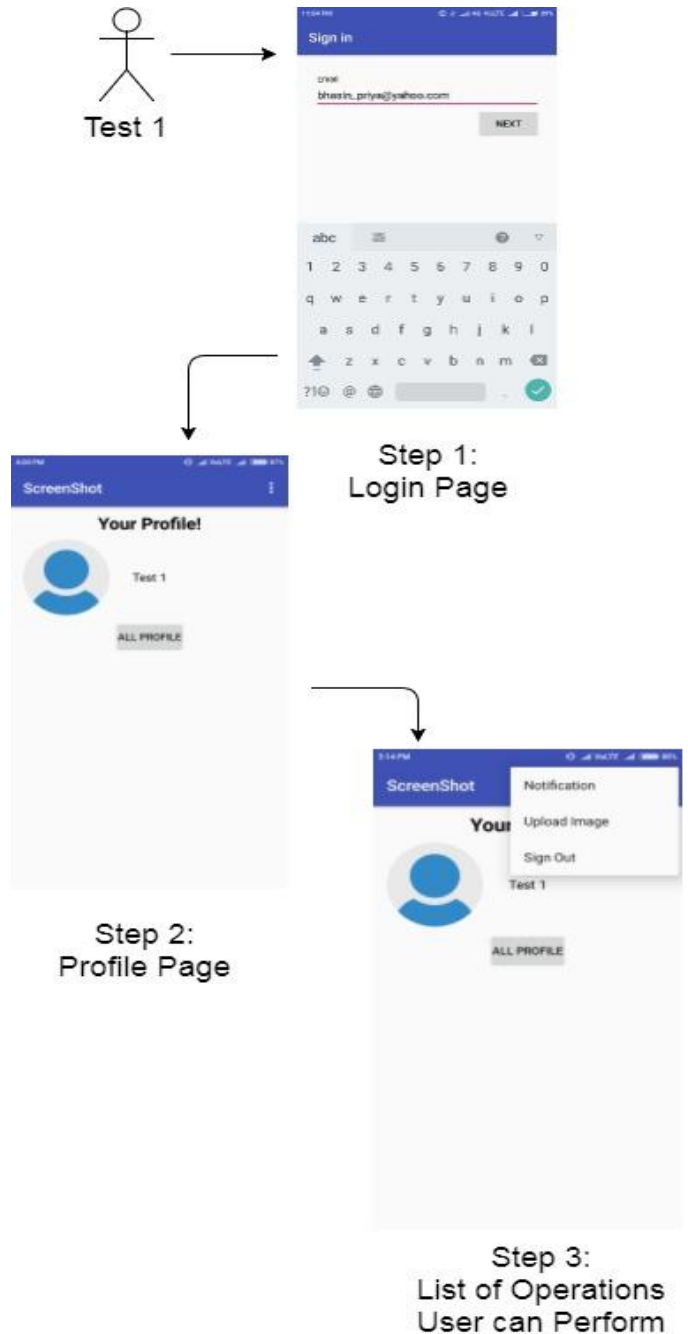
Step 1: He clicks on the app icon home screen of the application appears.

Step 2: A sign up page appears next; the user fills up the correct details with a valid email address.

Step 3: If the sign up is successful and user profile gets created.
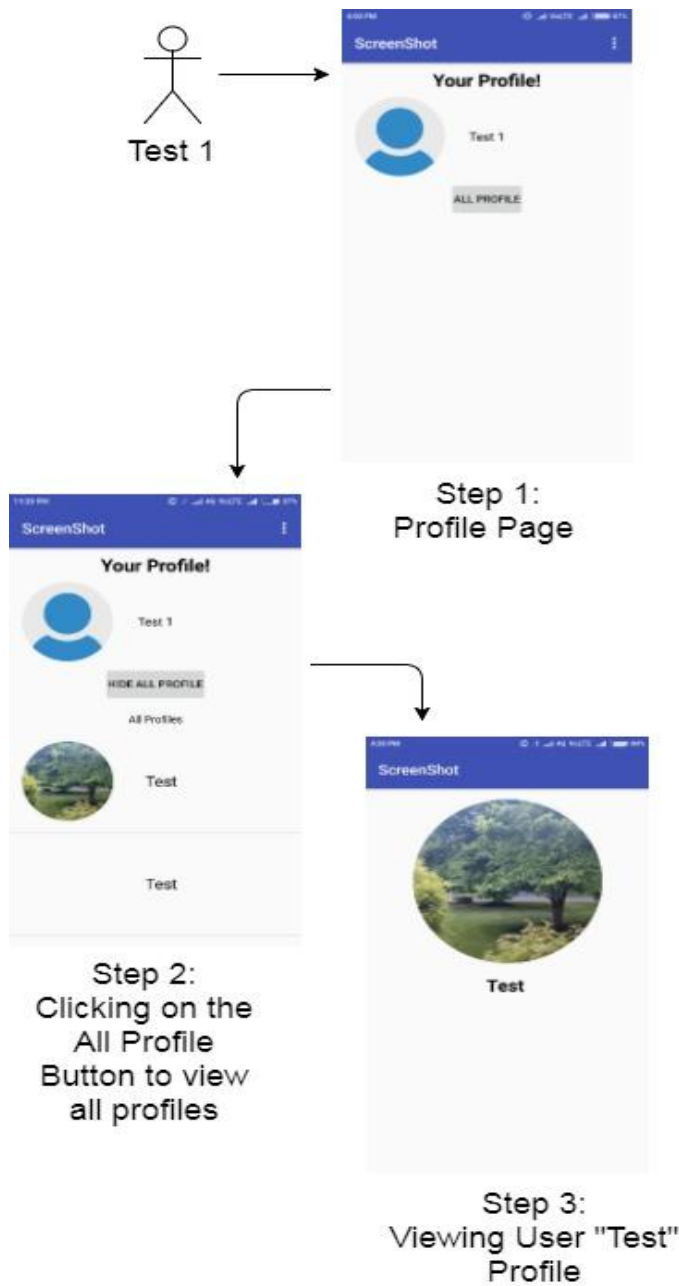
LOGIN WORKING

Step 1:
Login Page

Step 2:
Profile Page

Step 3:
List of Operations
User can Perform

In this module user signs in to his account for the same following steps are to be followed:

Step 1: Enter your login credentials on the login page.

Step 2: Press the "NEXT" button which will take you to your profile page.

Step 3: At your profile page you can see notifications, upload your image and sign out.

VIEWING PROFILE

Step 1:
Profile Page

Step 2:
Clicking on the
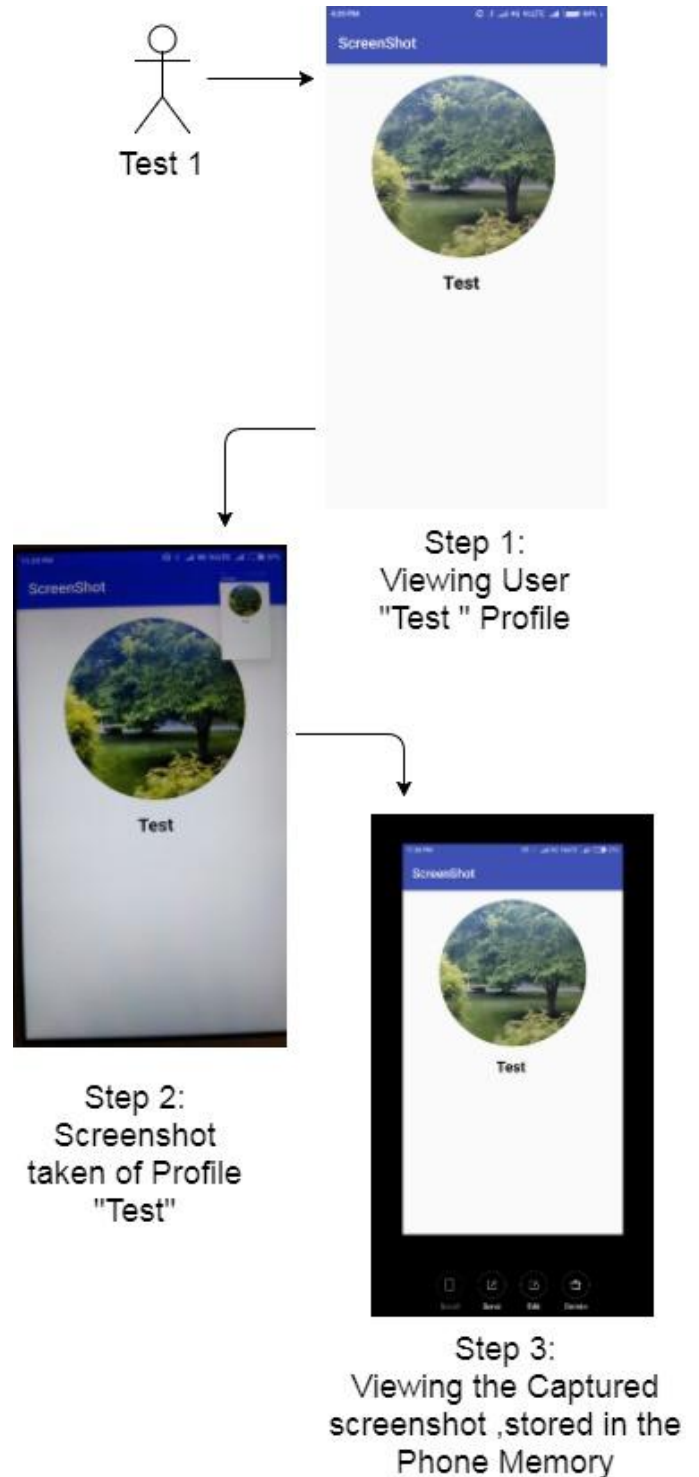All Profile
Button to view
all profiles

Step 3:
Viewing User "Test"
Profile

Here, user can view another user's profile, for the same following steps must be followed:

Step 1: Press on the "ALL PROFILE" button.

Step 2: Select the user whose profile you want to visit.

Step 3: View the user's profile.

SCREENSHOT CAPTURING

Step 1:
Viewing User
"Test " Profile

Step 2:
Screenshot
taken of Profile
"Test"

Step 3:
Viewing the Captured
screenshot ,stored in the
Phone Memory

After visiting another user's profile if the user wants to take a screenshot of other's profile he can take it and as soon as he tales the screenshot a notification will be send to the other user that this person has taken a screenshot of his/her profile picture at time and date when the user took the screenshot.

SCREENSHOT DETECTION/NOTIFICATION
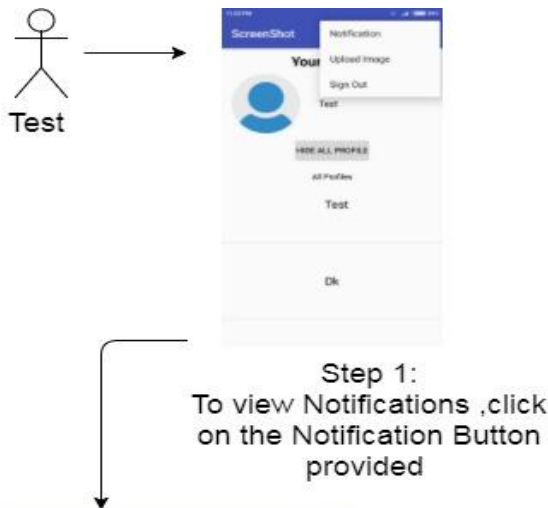
Step 1:
To view Notifications ,click on the Notification Button provided

Step 2:
Viewing Notification

Whenever a user of the application takes a screenshot of another user's profile he/she will be informed via a notification.
This notification can be viewed by the user and get to know who has taken the screenshot of his profile picture. In the

notification the date and time as well as the name of the user who took the screenshot is mentioned.
To view the notification user must follow these steps:
Step 1: Login to his account.
Step 2: Visit the Notification area by clicking on the notification button provided in the application.
Step 3: View the Notification.

V.CONCLUSION

In the end, the only solution to social application privacy and security issues is to have some knowledge of the ways in which one can get fooled. Don't post anything you would want to share from a stranger.[6][4] We have worked on a security breach of social android applications which doesn't concentrate on a secure way of exchanging information mainly photographs and profiles. We have successfully implemented the feature of secure data sharing and profile sharing.
Application ensure that if any viewer takes a copy or a screenshot of the photograph and profile, the originator of the same will be informed about the action along with the details.
This is implemented on a generic application, we have a view that the same should be implemented on standard social application – WhatsApp, Instagram, Facebook, Hike etc.

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