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DEVELOPMENT OF ANDROID APPLICATION FOR CONTROLLING CHILDREN'S USAGE OF SMARTPHONE

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ABSTRACT

In a world of everlasting development of technology, personal digital assistant such as smartphones have become extremely important among people around the world. The result, people became addicted to these devices, which can give negative impact on their mental health and well-being. The researchers see the importance of this issue and aim to develop an Android application, namely KidConrol, an application that can make a rule when their kid try to use smartphone. This application allows the parent to set the time when using the smartphone, the maximum time of using it, and the application allowed for the kid.

Keywords: Kid control, Smartphone, psychological factors.

1. INTRODUCTION

Nomophobia (no-mobile-phobia) is defined as the reaction of fear of not getting access to cell phone. [1] [2]. Have you thought about how long you can go without checking your cell phone? How about your children and their smartphones? According to Bianchi and Philips (2005) psychological factors are involved in the overuse of a mobile phone [3]. These could include low self-esteem, when individuals looking for reassurance use the mobile phone in inappropriate ways, and extroverted personality, when naturally social individuals use the mobile phone to excess. It is also highly possible that nomophobic symptoms may be caused by other underlying and pre-existing mental disorders, with likely candidates including social phobia or social anxiety disorder, social anxiety, and panic disorder [4-5]. Studies have shown that the average amount of time that people spend using their smartphones per day between 2011 and 2013 almost doubled, from 98.1 minutes in 2011 to 194.7 minutes in 2013. Also, use of communication platforms fell from 49% to 25% for all time spent using a smartphone [6]. Another study found that out of 547 male, undergraduate students in Health Services 23% of the students were classified as nomophobic while an additional 64% were at risk of developing nomophobia. Of these students, ~77% checked their mobile phones 35 or more times a day [7].

Not only affecting people in their mental state, nomophobia might affect people health state due to excessive amount of radiation exposure [11] [12].

This paper presents an application that can prevent children from getting nomophobia. To alleviate the problems mentioned above, the objective of this project is to design and develop a mobile application on the Android operating system for smartphone users called KidControl. Kid control is a login application which will provide two account. One is the administrator that can use all the smartphone feature and control other account access like what application it can use, allowed hours to access it and it's maximum time for using the smartphone. The guest account only can use the feature that given by the administrator and can only accesses the smartphone for given time.

There are many existing application related to nomopobia which described below.

Flipd [13] is an application that will automatically lock the device for a period of time when it reaches the defined criteria.

Moment [14] is an application that shows daily usage in minutes but it doesn't show the minutes' usage app wise. This app can be used to control addiction on the iPhone.

Off time [15] is an application that collects usage record and statistics. Also, it lets users defame automated actions such as turning off notifications and alert and blocking incoming SMS messages.

Table-1 shows the difference between KidControl and other existing application that are related to it. There are 7 part that give the detail of the application. First is the supported OS, there are two well-known OS for smartphone, which is Android and Apple. Second is the application history, this detail is for showing the history of using the application. Third is total application, total application is the total of application that are installed in the smartphone. Fourth is the extra account, extra account is whether the application give two account which have different privilage. Fifth is the notification, this is for giving notification that whether the application is blocked or not. Sixth is for treatment regarding the nomophobia. And the seventh is the lock screen, this feature is for locking the screen if some condition meet.

	Supported OS	Show application in used	Total application usage	Extra account	Notification	Treatment	Lock Screen
Flipd		No	Yes	No	Yes	No	Yes
Moment		No	Yes	No	No	No	No
Offtime		Yes	No	No	Yes	No	No
Kid Control		Yes	Yes	No	Yes	No	Yes

2. METHODOLOGY

A. Application

In this era, the use of smartphone became an important role on the society daily life. Android, which is the OS (operating system) of smartphone became the most used one. Developer of android can innovate and advance regarding the use of it. In the future, both user and developer will play huge role in OS [13] [14].

The application that the researcher makes is a login application which will provide two account. One is the administrator that can use all the smartphone feature and control other account access like what application it can use, allowed hours to access it and it's maximum time for using the smartphone. The guest account only can use the feature that is given by the administrator and can only access the smartphone for given time.

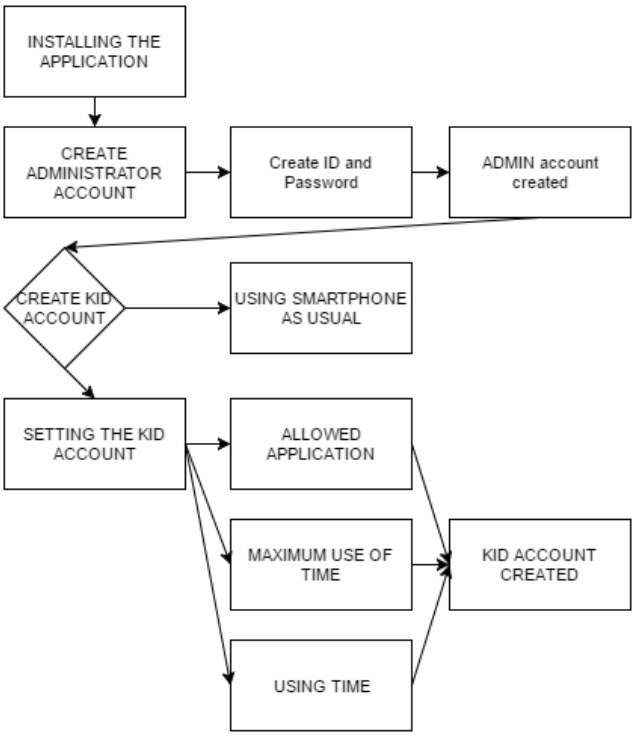

Figure-1. Installing the application.

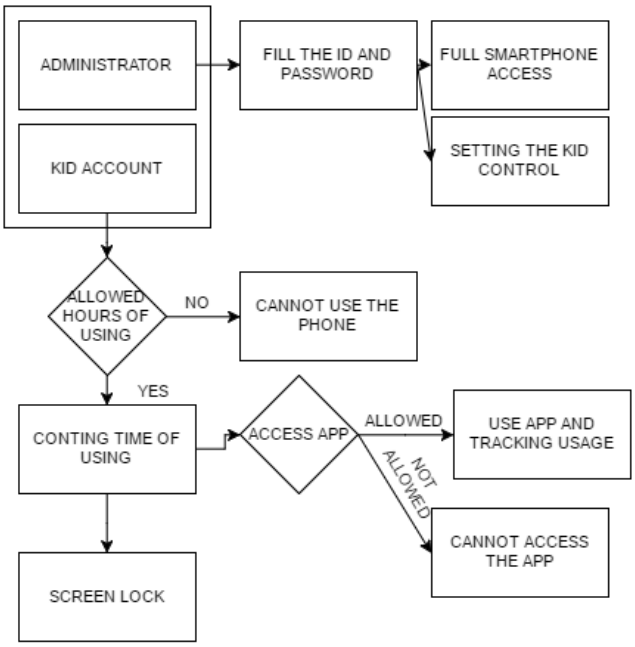

Figure-2. Accessing the smartphone.

In Figure-1 it show what to do after installing the application.

- First it will create the administrator account, the user must make the id and the password of it.
- After finishing creating admin account, it will provide option to make the kid account.
- If the user choose no, it will go to home and the user can use the smartphone as usual.
- If the user chooses yes, it will go to setting the kid account.
- In the setting account, we can configure which application that the kid can use; the maximum time when the kid access the phone; in what hour the kid can access the phone.

In Figure-2 it show the screen look when the user of the phone try to access it.

If the user wants to access it as the administrator, it will ask the id and the password of the administrator.

If the user wants to access it as kid:

- First the application will check if it's the allowed time to use the phone, if it is, it will go to next, if it is no, the screen will show "SORRY YOU CANNOT ACCESS PHONE IN THIS HOURS", and the screen will goes black.
- If it is the allowed hours, it will go to home and show the list of allowed applications.
- When the user use or access one of the allowed applications, the Kid Control application will track how many time spend. If the user exit the application and try to access another allowed application, it will also track how many time spend. The kid control application will add all time spend when using the allowed application as the Total Time of a Day. If the Total Time of a Day exceed, the screen will lock itself.

3. DESIGN AND IMPLEMENTATION

The section will describe the design and implementation of the kid controlling system. It divided: the restricting app system, time schedule system.

A. Restricting application

This system consists of listing the application, and making restriction to the application.

a) List application
This activity used to list the existing application
b) Restrict application
This activity used to restrict the application

B. Time schedule system

This system work by giving limitation to using specific application

4. DEVELOPMENT PROCESS

A. Restricting application

In the application, the researcher has managed to restrict the application. To do it, it need to list the existing application, and after that it depend on the user whether want to block the application or not.

B. Time schedule system

In the application, the researcher has managed to select specific time to access the specific application. So the user can set the specific time to access the application.

5. ALGORITHM

As shown in Figure-3, to use the application need usage access to monitor the application. After giving access to it, the application will list the installed application on the user smartphone. Next the user can check what application wants to be blocked. By selecting the application, it will lead to another activity, which the user can select on what time and what day the application wants to be blocked. After making the setting, the user can choose determine to apply the setting.

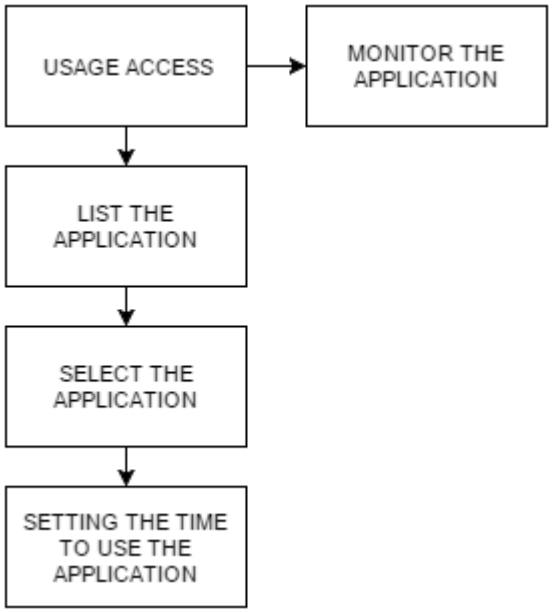

Figure-3. Application algorithm.

For monitoring, the application will track the application that run by the user.

6. RESULT

In Figure-4, it shows the first display when using Kid Control for first time. The application will ask the user what kind of lock the user want to use. In this paper, researcher will use pattern.

In Figure-5, it shown that after selecting the pattern lock, it will move to another activity which is setting the pattern. The pattern itself is 3x3 dot.

In Figure-6, it has shown the pattern the researcher use for this paper.

Figure-7 has shown what happen after setting the pattern for the application. It will take the user to the KidControl Main Menu. In the Main Menu there are 4 choices. Lock button is for activating or deactivating the lock on the application.

Figures 8, 9, 10, 11 shows the setting of the KidControl. Lock Type is for changing the lock type, there are two lock type which is pattern and a text password. Start at boot will allow the application start when the smartphone is being turned on. Relock after screen off is for making the application asks for the lock pattern or password again if the screen goes off. Start with call is for making the user can access or start the application by entering certain number in the call menu. Hide icon is for hiding the KidControl from the smartphone visible application, it will make the user can only access the KidControl via call a certain number.

Figure-12 shows the list of the application in the Kid Control. User can choose what application that wants to be locked

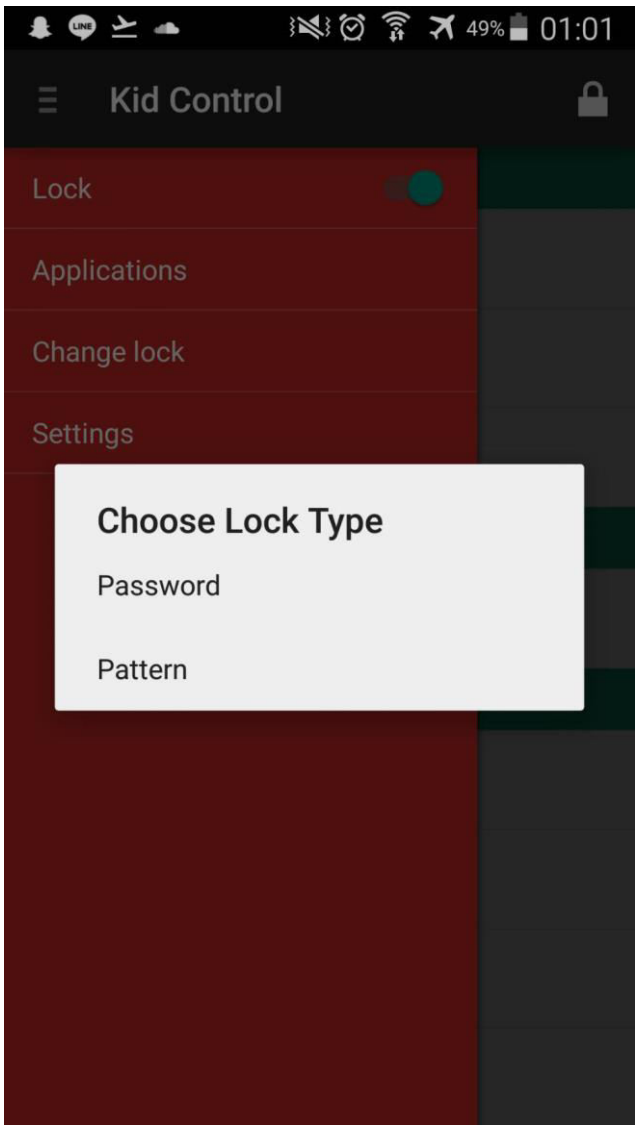

Figure-4. Asking user to use what type of lock to use to open the application.

Figure-5. Pattern set view.

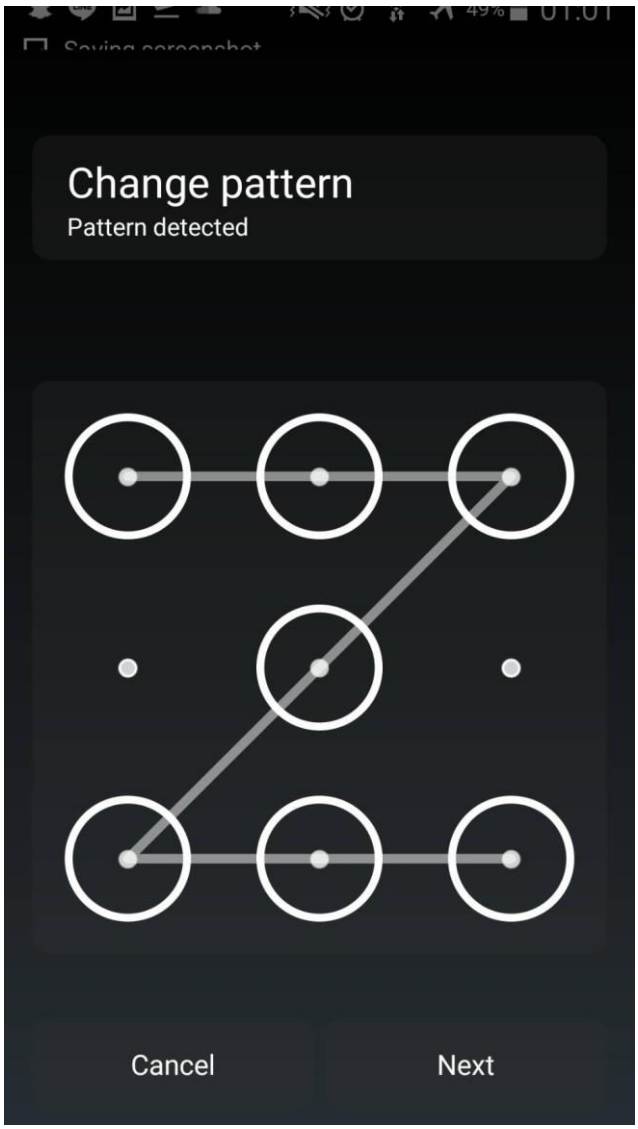

Figure-6. Setting the pattern.

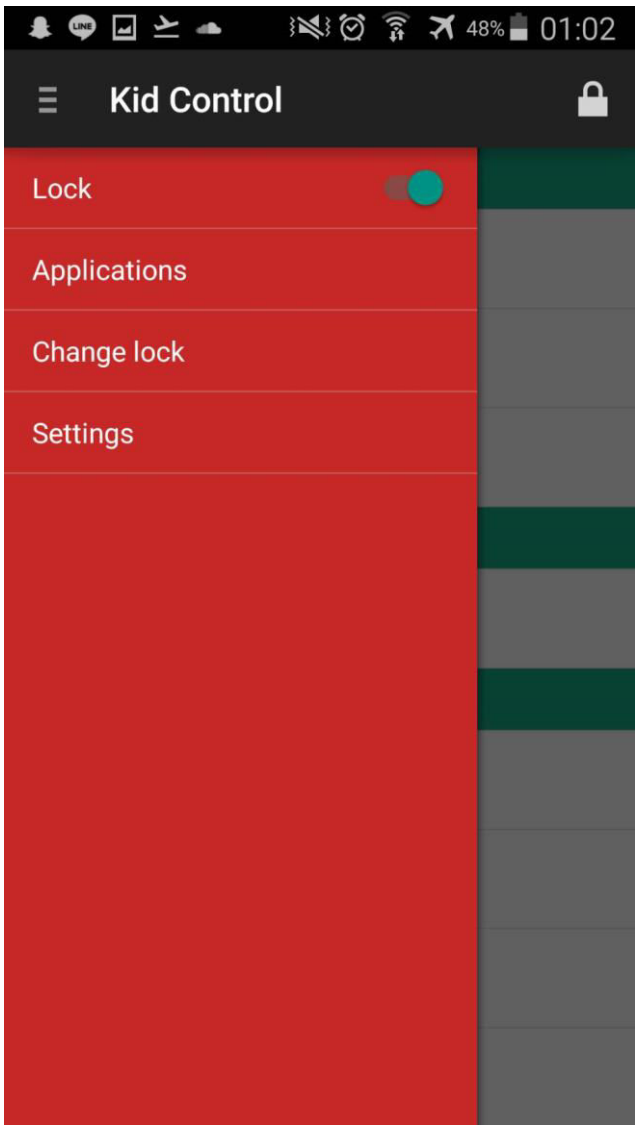

Figure-7. KidControl main menu.

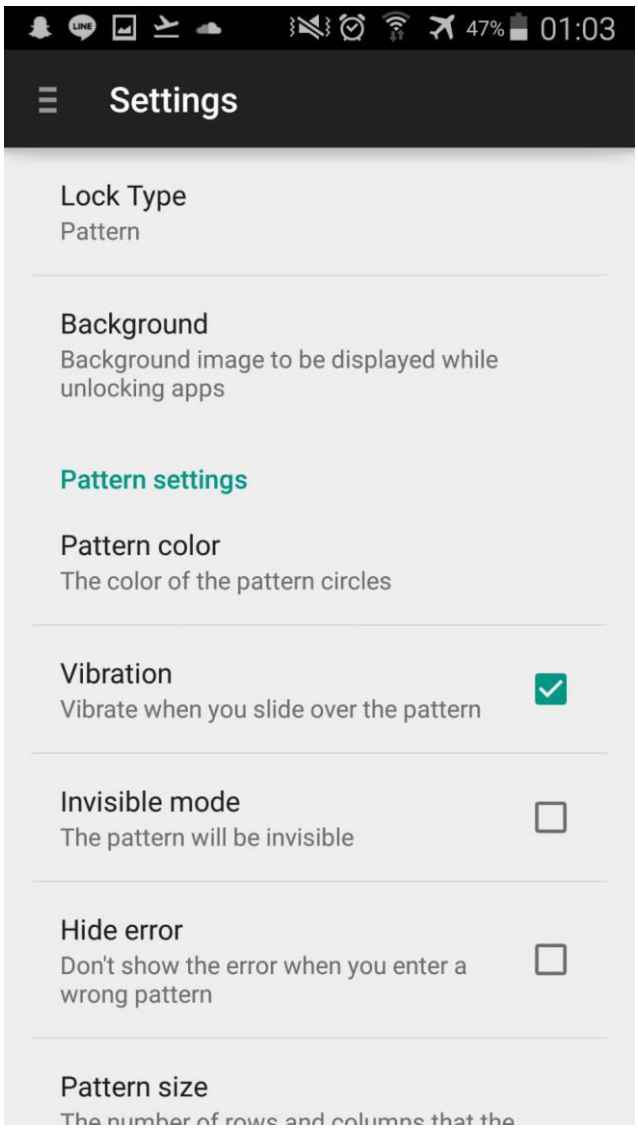

Figure-8. KidControl settings.

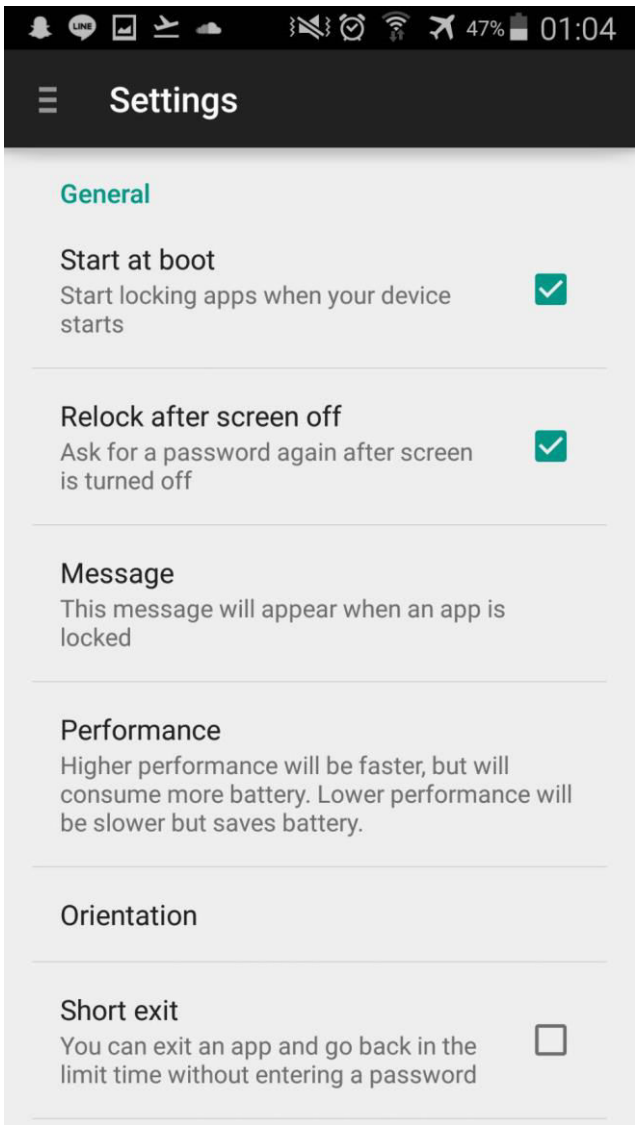

Figure-9. KidControl settings.

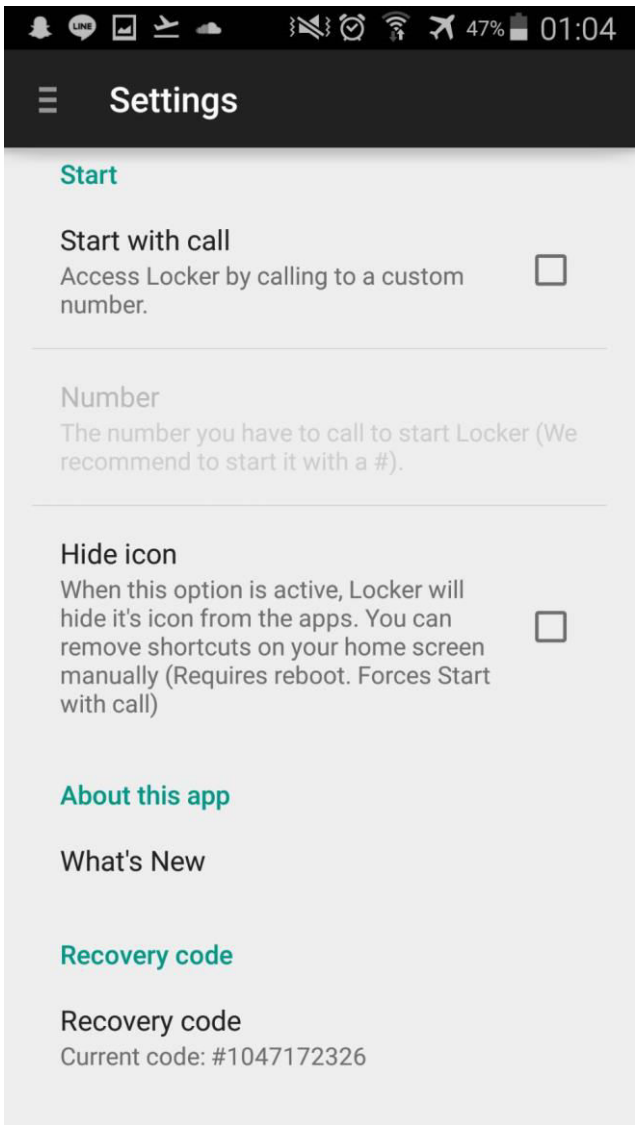

Figure-10. KidControl settings.

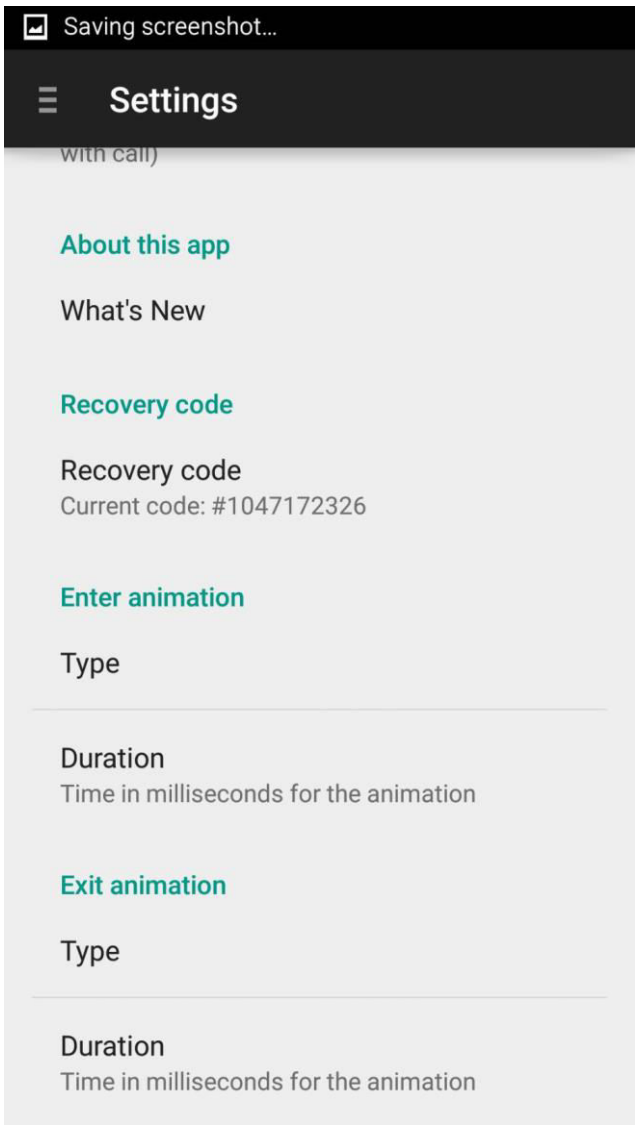

Figure-11. KidControl settings.

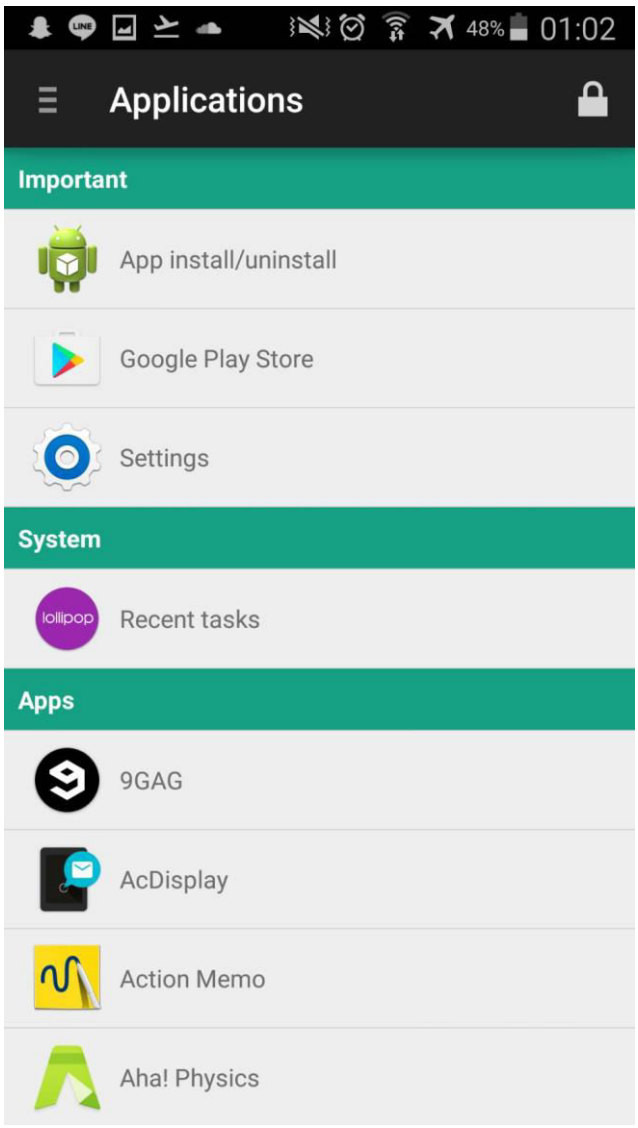

Figure-12. Application listing.

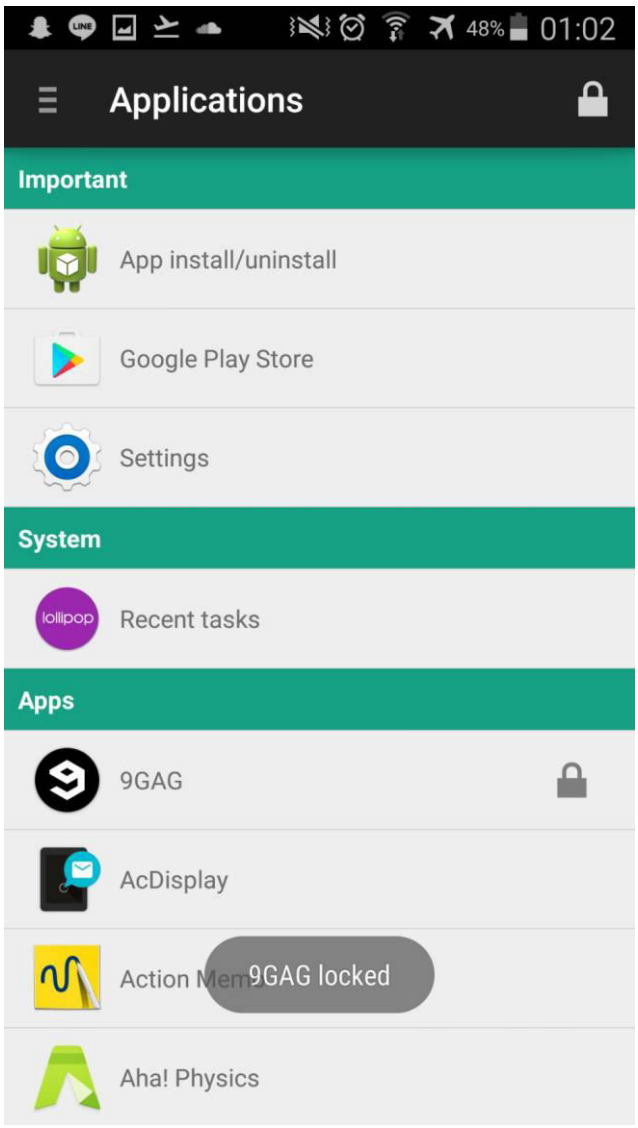

Figure-13. Locking an application.

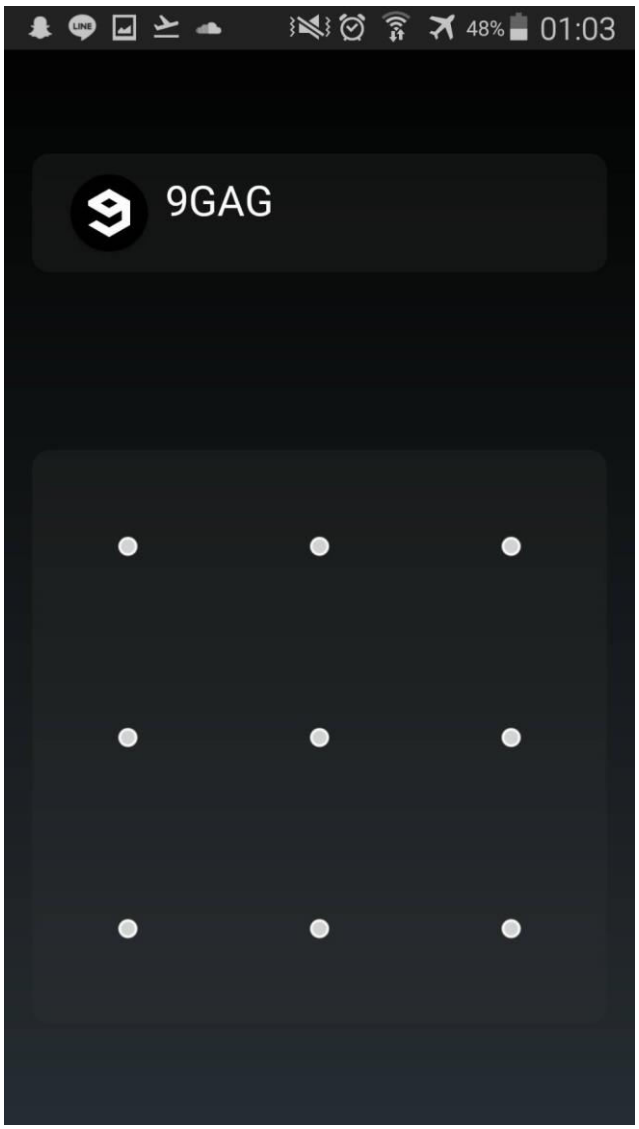

Figure-14. Attempt to access locked application.

Figure-13 shown that in this paper, researcher chooses 9GAG application to be locked. Figure-14 shown an attempt to access locked application which is in this case is 9GAG application.

7. CONCLUSIONS

This paper allows lessening the so called smartphone addict called nomophobia. With using the development of android application to block and manage the time of using the smartphone, the parent will be less worried for giving their children access to smartphone.

ACKNOWLEDGEMENTS

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