



National Forensic
Sciences University
Knowledge | Wisdom | Fulfilment
An Institution of National Importance
(Ministry of Home Affairs, Government of India)



MINOR PROJECT

ON

ANDROID APP PERMISSION SCHEDULER

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PROJECT GUIDE
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WHAT IS PERMISSION ?

Android app permissions are requests made by apps to access specific features OR data on your phone .

Permissions include access to your Camera , Microphone , Contacts , Location .

ACCESS....

We can Grant OR Deny the permission while installation
OR
Modify them in system settings .

ALLOW
OR
DISALLOW

General public grant all the permission prompt whatever shows on the window

They just allow there without knowing the consequences in future.

PEOPLE !

TYPES OF PERMISSIONS?

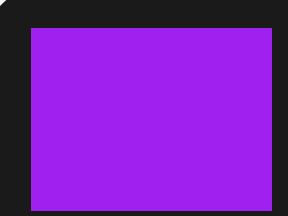


Less sensitive and Generally do not pose any risk to your device OR data.

--:EXAMPLES:--

- ACCESS_NOTIFICATION_POLICY
- ACCESS_WIFI_STATE
- MODIFY_AUDIO_SETTINGS
- SET_ALARM
- SET_WALLPAPER

NORMAL



Apps from same author & signed with same Digital certificate in Android system .

It provides a way for apps to securely interact with each other and Access & share protected resources .

--:EXAMPLES:--

- BIND_AUTOFILL_SERVICE
- BIND_INPUT_METHOD
- CLEAR_APP_CACHE
- READ_VOICEMAIL

SIGNATURE



More Sensitive and have the potential to compromise your device OR data if not used properly comes with explicit prompt which General Public ignore it by clicking on allow & doesn't care much.

--:EXAMPLES:--

- CAMERA
- WRITE_CONTACTS
- RECORD_AUDIO
- SEND_SMS(Banking Apps)

DANGEROUS

WHAT IS SCHEDULED APP PERMISSIONS ?

WHAT ?

A feature introduced in Android 11 that allows users to grant temporary access to specific permissions requested by an app

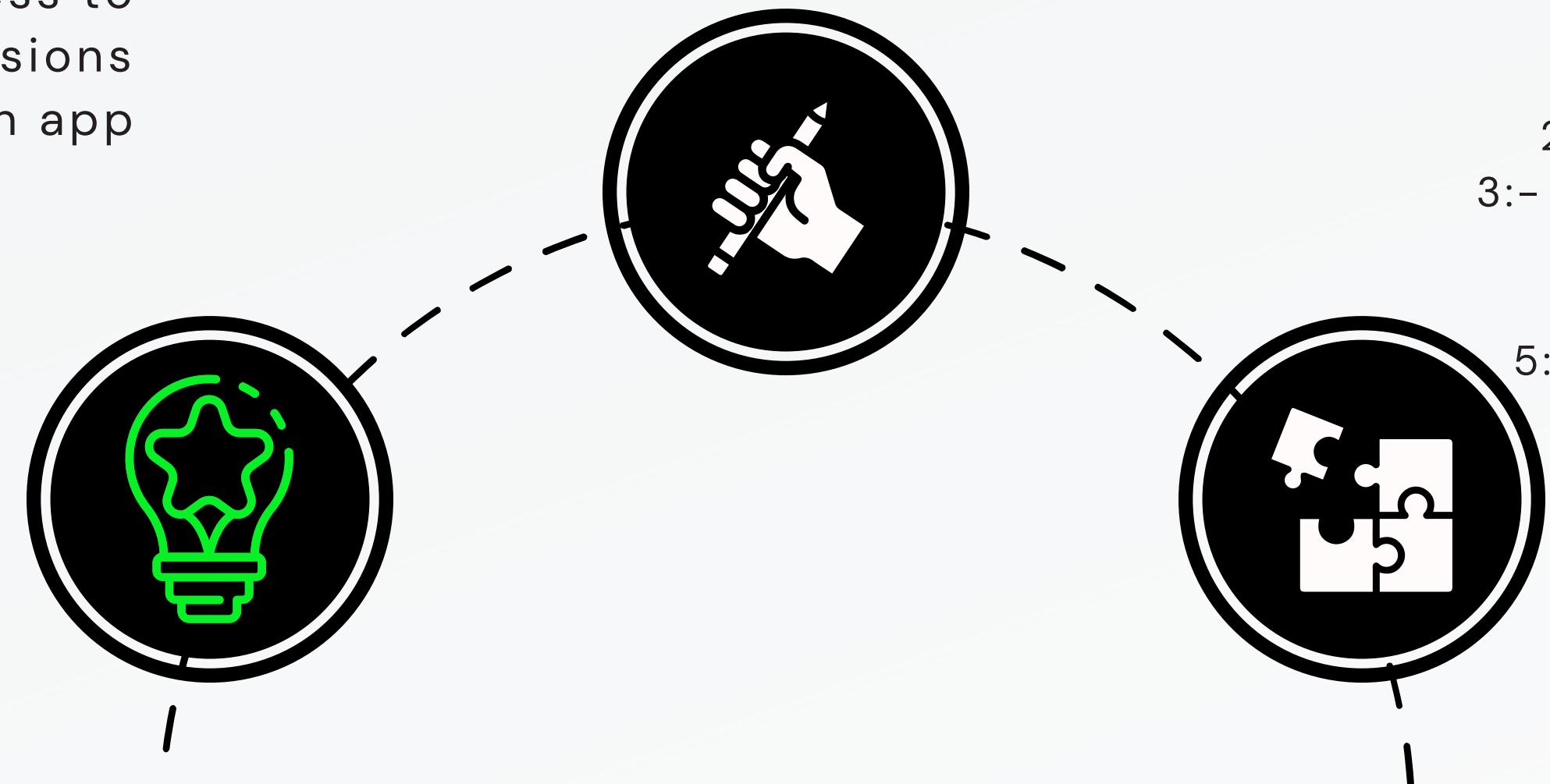
EXAMPLE

Granting an app temporary access to the microphone during a video call or to the camera for a short period of time when the app is launched.

Technical Implementation

Android uses a new API called "one-time" permissions to grant temporary access to permissions.

- 1:- User Interface
- 2:- Permission API
- 3:- Permission Handling
- 4:- Permission Revocation
- 5:- User Notification



WHY IS SCHEDULED APP PERMISSIONS ?

Reasons ??

To enhance privacy and security by limiting an app's access to sensitive data or hardware features when not needed.

To reduce the risk of data breaches

Advantages

Allowing location access only during certain times of the day or when using a specific app.

Restricting an app's access to sensitive data, such as contacts or photos, to only when needed.

Disadvantages

Can make it more difficult for apps to function properly if access to certain features is restricted.



LITERATURE REVIEW

Regarding App permissions
&

How it's deeply connected with functioning
of android system.



...my szybko juz na długo. Chcesz go zapytać, co się stało we wnętrzu Ziemi, co takiego发生了? nim wstrząsnęło. Nie pytasz. Jesteś ak swoje granice. i mnie – szepcze.

gle, jakby usłyszała swoje imię, i staje spode łba, uświadamiając sobie, co to

y po prostu zmysłem srebra egoś – bo przecież już w sposobie jego nienicznego – są tak ni żadnego srebra. ego ciała. Układ wnętrza łodygi ułożone są w niewielkie matrycały w żadnej roślinie ani żywej Nassun widzi też, że nie ma tam ... Nie wie, jak to opisać. Należały być wypełnione srebrem. Poda, zaczyna spostrzegać, że coś. W końcu, biorąc głęboki „, powiedział Stal. Powinno by przyjrzeć się kawałkowi

też chcesz odrzucić, dziwnie pocieszającą. – Alabaster powiedział, że rozumie, dąbała. Ale ja nie rozumiem, dlaczego on zumiem też, czego teraz chce. Twierdzi, ale kto jest tą trzecią stroną? Po której sposob Pęknięcie... ma pomóc? Nieważne, jak bardzo próbujesz, że Antymona była kiedyś człowiekiem zbyt wiele: bezruch jej twarzy, brak dobiega jej głos.

jak pęd natychmiast zaczyna wyciągać między komórek jej ciała, pomyślałaby, go. A tak naprawdę za chwilę to coś ją zatrzymało. Ma teraz jednak dostęp do znacznie tylko to w jej wnętrzu. Powoli, pokonując szafiru – a szafir odpowiada natychmiast. Alabaster nazywał je „wzmacniającymi” Nassun przyszła na świat. Ty myślisz o naszej historii, zresztą opisywała je Ykce. Dla Nassun obeliski są po prostu silniki – proste urządzenia złożone z pomp hydraulicznych Tirimo sfery geo i hydro, a czasem rur kowane mechanizmy, jak na przykład winnice. Na temat silników jest bardzo mizerna, ale jasne jest, że do pracy silnik potrzebuje paliva. Płynie więc z błękitem, a moc szafiru w jej dloniach wydaje się oszołomione tym, choć Nassun sądzi, że to tylko jej wyobrażenie. Czy słyszała kiedyś szum, a ona widzi, jak ru

A LARGE-SCALE EMPIRICAL STUDY OF ANDROID APP PERMISSIONS AND USER BEHAVIOR

Citation: Felt, A. P., Chin, E., Hanna, S., Song, D., & Wagner, D. (2011)

Summary

- This paper presents an empirical study of Android app permissions and **user behavior**, focusing on the frequency and **popularity** of different **types of permissions** and the ways in which **users respond** to requests for permissions.

- The study finds that many apps **request more permissions than are necessary** for their intended functionality, and that users are often **unaware** of the implications of granting permissions to apps.



INVESTIGATING USER PRIVACY IN ANDROID AD LIBRARIES

Citation: Reardon, J., Barbieri, N., Bonneau, J., & Narayanan, A. (2015)

Summary

- This paper investigates the **privacy implications** of Android **ad libraries**, which are used by many apps to display advertisements to users.

- The study finds that many ad libraries **collect user data**, including personally **identifiable** information, and that this data is often **transmitted to third-party servers without** the user's knowledge or **consent**.



WHO KNOWS WHAT ABOUT ME? A SURVEY OF BEHIND THE SCENES PERSONAL DATA SHARING TO THIRD PARTIES BY MOBILE APPS

Citation : Binns, R., Lyngs, U., & Van Kleek, M. (2018)

Summary

- This paper presents a survey of the personal **data sharing practices** of Android apps, focusing on the extent to which **apps share user data** with **third-party entities**.

- The study finds that many apps **share user data** with **multiple third parties**, and that this sharing is often **not disclosed to users** in a **transparent manner**.

THE EFFECT OF ANDROID PERMISSION MODELS ON SECURITY AND USABILITY

Citation : Felt, A. P., Ha, E., Egelman, S., Haney, A., Chin, E., & Wagner, D. (2012)

Summary

- This paper compares two different Android permission models.
- 1:- **traditional** model--- in which users are asked to grant permissions at **installation time** only,

- 2:- **New Model**--- In which permissions are granted on an **as-needed basis**. The study finds that the new model is more usable but less secure than the traditional model.

ANALYZING INTER-APPLICATION COMMUNICATION IN ANDROID

Citation : Grace, M., Zhou, Y., Zhang, Q., & Jiang, X. (2012)

Summary

- This paper analyzes the **inter-application communication** (IPC) mechanisms used by Android apps, **focusing** on the **security implications** of these mechanisms.

- The study finds that many **apps use insecure** IPC mechanisms, which can be exploited by attackers to gain access to sensitive data.



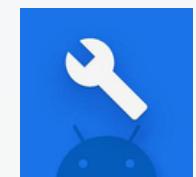
OBJECTIVE & AIM

I Explored the market to find Similar apps where I can implement the timing schedule system on App permissions

Here are the App Reviews..

Need techies to install the Sub-app **shizuku**
&
Need of starting USB-debugging
&
Wireless Debugging to use the app features if android version is allow it to... !

APP OPS



It's just block **whole app at once** with timing system !

(Timing functionality can be useful)

APP LOCK



It's a paid version of **310** Rs. which provide highly modification on each and every task in android app

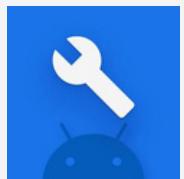
Heavily Modifiable and **expensive** at the same time

(Code can be useful)

TASKER



APP OPS



App Ops

Choose a working mode:

Shizuku mode

- + Works both root and non-root devices
- + Very fast, with negligible resource consumption
- + Enjoy full functionality
- Requires to install an open-source app (Shizuku)
- For non-root devices, every time of the reboot, it's required to start Shizuku using adb with computer
- For devices running Android 11 or above, Shizuku can be started without computer

→ Continue

App Ops

Working mode: Shizuku mode

Please install Shizuku first.

Shizuku is an open-source project starting from 2017 (see [RikkaApps/Shizuku](#) at GitHub). It is designed to benefit multiple apps that require root or adb. Not only this app, but also some apps from other developers are using Shizuku.

With Shizuku, this app will get incredibly high speed and more interesting features. For Shizuku itself, the battery or performance consumption is negligible (zero when not used).

Like the Unix philosophy, one program should only do one job. Shizuku and this app pursue this philosophy. In fact, build-in everything is more like what "bad apps" like to do.

Download Shizuku

Retry

Switch to another working mode

Google Play



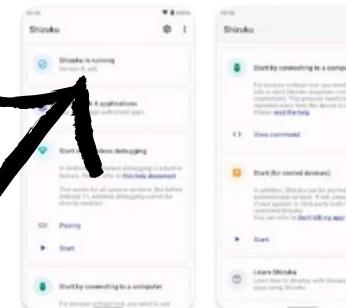
Shizuku
Xingchen & Rikka

3.9★
2K reviews

2.2 MB

Rated for 3+

Install



About this app

Shizuku is an open-source app for serving multiple apps that require root/adb.

Tools

Data safety

Safety starts with understanding how developers collect and share your data. Data privacy and security practices may vary based on your use, region, and age. The developer provided this information and may update it over time.

Shizuku

Shizuku is not running

Start via Wireless debugging

On Android 11 or above, you can enable Wireless debugging and start Shizuku directly from your device, without connecting to a computer.

Please view the step-by-step guide first.

Step-by-step guide

Pairing

Start

Start by connecting to a computer

For devices without root, you need to use adb to start Shizuku (requires computer connection). This process needs to be repeated every time the device is restarted. Please [read the help](#).

View command





विद्या अमृतं अङ्गते

APP LOCK



AppBlock

58:00

Quick Block

▶ Start

⌚ Timer

diamond Upgrade



Discover scheduled blocking

Try blocking by your needs, time, location and more

+ Add

×

Blocking conditions

Select when or where you don't want to be disturbed

⌚

Time

e.g. working hours, weekend

📍

Location

e.g. workplace or campus

📶

Wi-Fi

e.g. home network

⌚

Usage limit

e.g. max 30 minutes a day / an hour

💡

Launch count

e.g. max 20 times a day / an hour

←

Active time

Days

Su Mo Tu We Th Fr Sa

Every Monday

Times

12 AM 6 AM 12 PM 6 PM 12 AM

All day long

12:50 PM – 2:50 PM

+ Add

Save

×

What is blocked

APPS

WEBS

KEYWORDS

Add newly installed apps



1.1.1.1

×

New schedule

Conditions

⌚

Time

Monday
12:50 PM – 2:50 PM

Blocklist

Applications

1.1.1.1 airtel App Market

Websites

Keywords

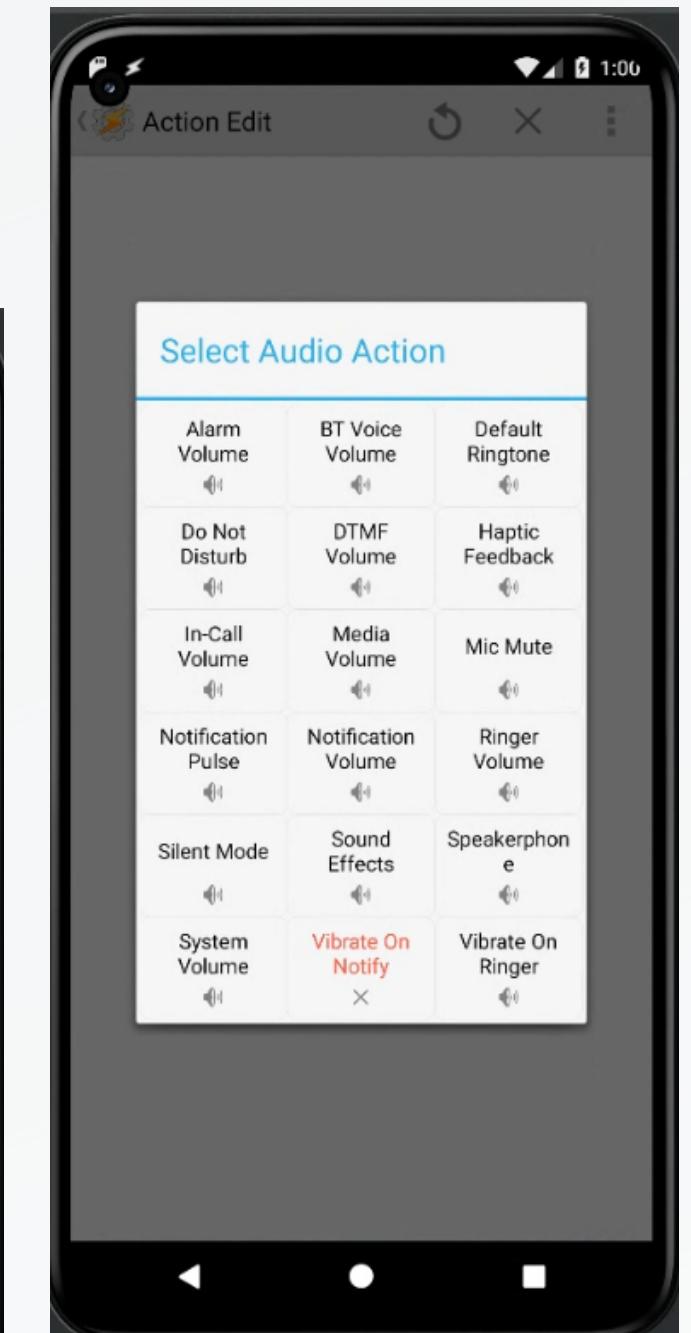
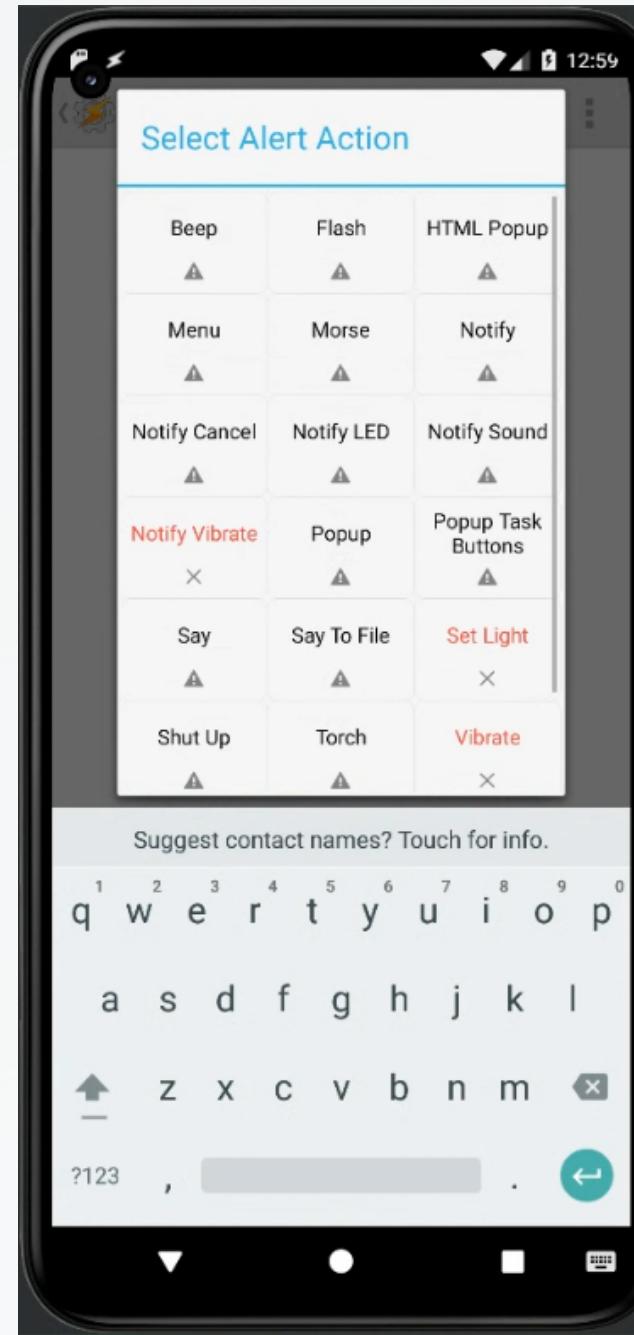
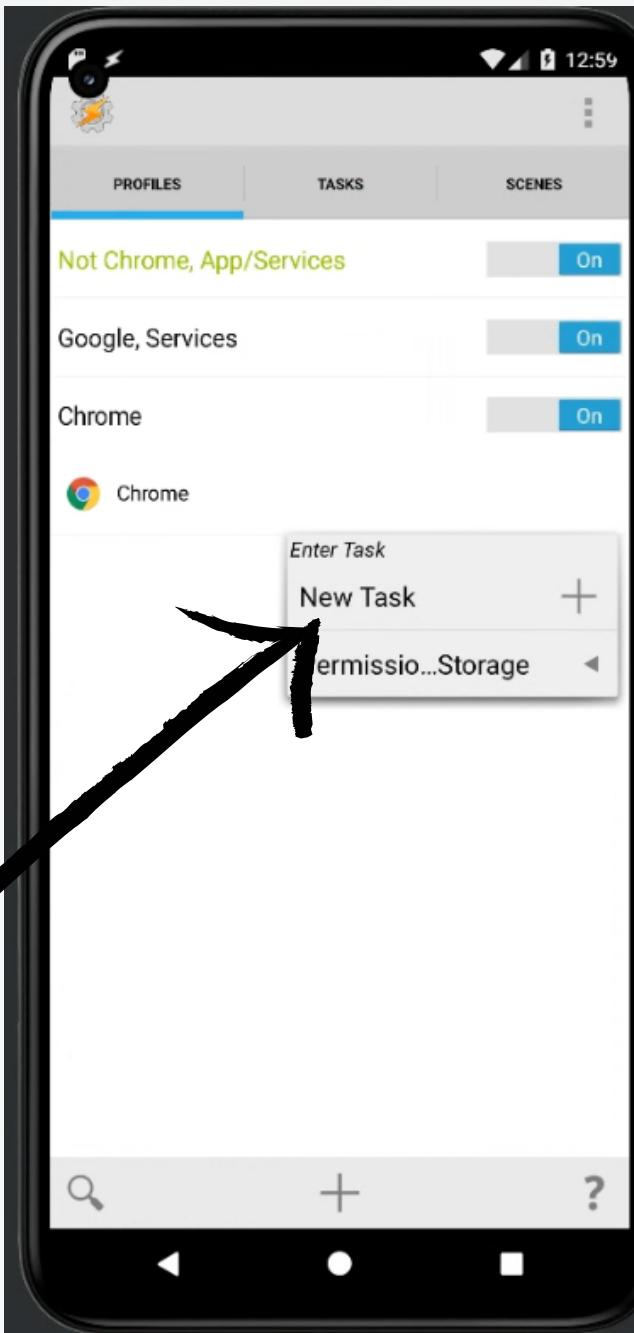
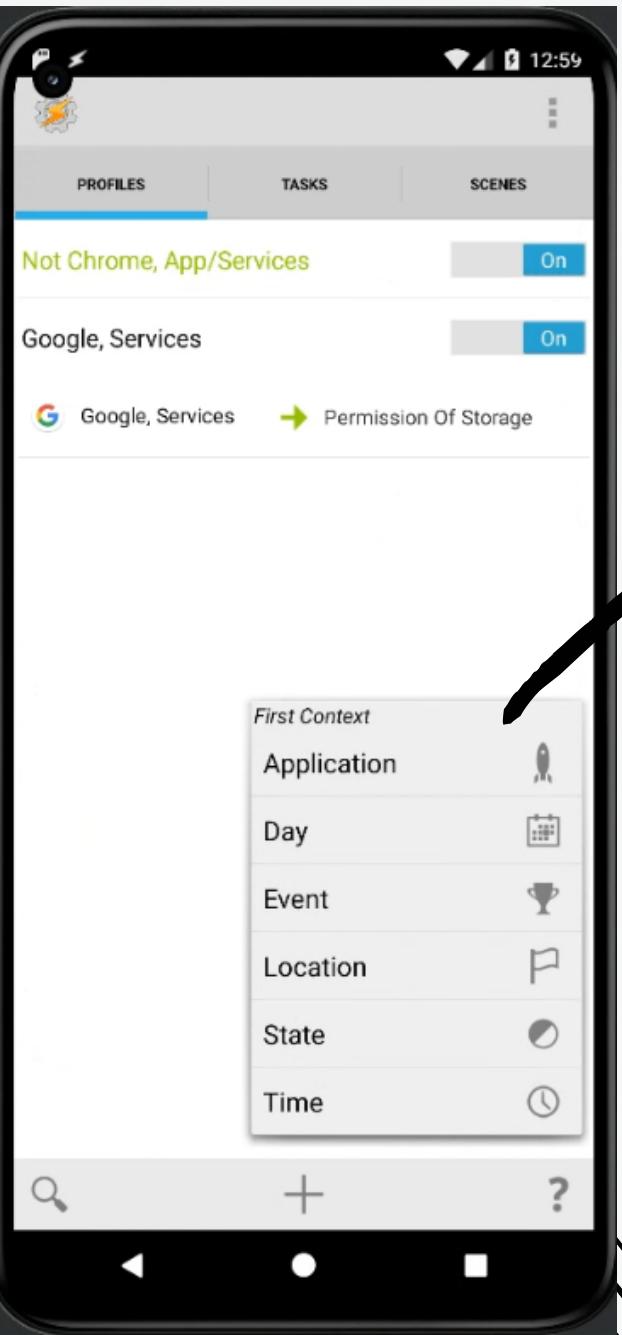
Save

Create



विद्या अमृतं अङ्गतं

TASKER



THEN, WHAT NEED TO MAKE ? AN APP WHICH HAS...



A user friendly app which has simple and clean UI with functionality like

- 1:- App permission controller
- 2:- Group permission Controller
- 3:- permission History
- 4:- Risky App alert which has over-needed permission.
- 5:-Recently visited app history.

EASY TO ADAPT



Which is easy to navigate for giving all the necessary permission app needs to control the whole system of permissions like ,

- 1:- Open accessibility setting menu for us to give access with pop-up instruction.
- 2:- Manual Permission turnoff mode is also availa... .

HELP TILL FULL ACCESS



Categorize the Risk Factor of different apps installed in the system in

- 1:- High
- 2:- Medium
- 3:- Low
- 4:- No Risk at all

GIVE ANALYSIS & REPORT ALSO



PRESENTING..... APP PERMISSION SCHEDULER

Have Functionalities like:

Risky Apps Analysis(Severity H M L)
App permission Controller
Special Permission Controller
(Collected the Scattered Permission
System of android system)



Functionalities Needed !

App permission Scheduling on time basis .

Improved Ideal App permission Signatures
Database/Functionalities for better prediction !



METHODOLOGY WITH TOOLS



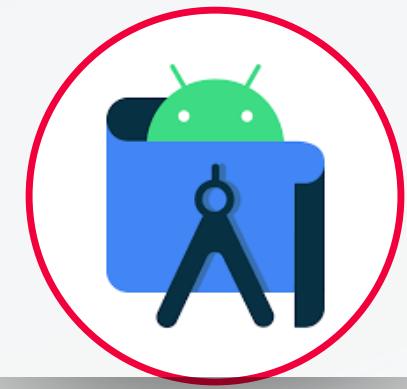
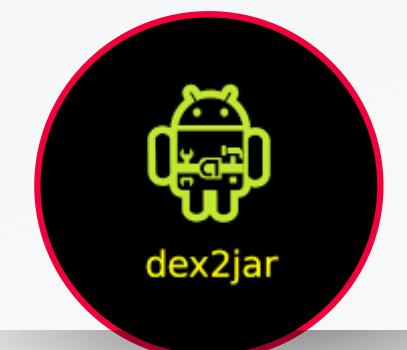
Source code

De-Compile with permission of author.

Fetch the logic from all those 3 apps.

1:- Time from AppLock

2:- Task & Trigger Activity from Tasker



Code & Run at IDE

Include other add-on functionality like

1:- Permission Timer Binding

2:-App permission

signature dataset

APP PERMISSION MANAGER



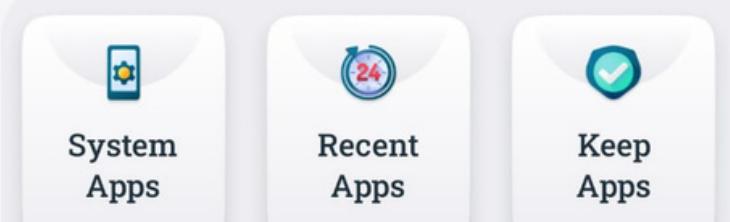
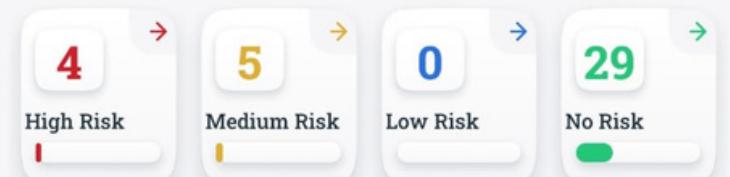
APP PERMISSION MANAGER

23% OF YOUR INSTALLED APPS THREATEN YOUR PRIVACY

- Apps Permission
- Group Permission
- Special Permission
- Permission Dashboard
- Permission History

APPS PERMISSION

Install apps



RISK APPS

High Medium Low No

Search App

PhonePe	⚠️
YONO SBI	⚠️
WhatsApp	⚠️
Telegram	⚠️

PhonePe

com.phonepe.app
23 January 2021
SMS
Phone
Microphone
Location
Contacts
Camera
Storage
Other Permissions

Apply Changes

Force Stop

Keep



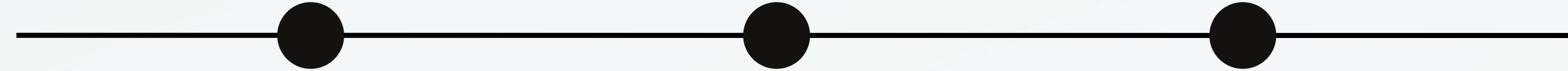


ROADMAP

04

05

06



APRIL

Fetch the source code
from the app author.
&
start working on binding
the functionality with
app permission manager
app

MAY

Start binding the ideal
android app permission
signature dataset
for android system.

JUNE

SEE Presentation

THANK YOU

*Granting **Excessive** permissions to an app is like opening the door to a Trojan horse - you may not know what **harmful** elements are hiding inside until it's too **late***

