

Shreddit (V3) User Guide (Android)

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Introduction

This is user guide for *Shreddit Android*, a robust, light weight, and yet powerful data shredder for Android platform. The data shredder can perform multiple shredding jobs at same time, suitable to be used for theft protection.

Why Data Shredder

If you are reading this user guide, then might be you are familiar with the purpose of the data shredder. But here is the simplified explanation. Delete command does not take deep dive to wipe the file contents. Any ordinary free data recovery software can access the content of the *normally* deleted file. This could compromise your privacy. Your mission critical data could be stolen whereas you would be thinking that you have already deleted it.

How filesystem delete works

Delete operation on any platform or operating system does not erase or wipe the file blocks, instead it just marks them deleted and these blocks are available to be allocated for new incoming files.

How Android gallery delete works

When android gallery app performs delete command it uses android operating system delete services. It does not perform the deep erase or secure erase on your images or videos. Gallery app also caches images thumbnails in devices cache. Delete operation merely removes your images and does not clear the gallery cache. *Data recovery software can use this cache to get your images and compromising your family privacy.*

Protecting data from un-concerned

Data shredder targets all file blocks of the subjected file and android system cache to secure erase your media files and other data. This deep erase completely wipes the file system block which holds the content of the file. This leaves the data irrecoverable and hence no un-concerned whether thief or hacker can access your securely erased data.

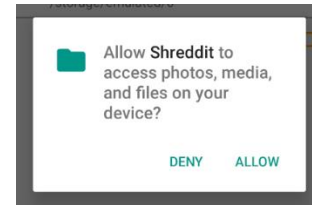
Caution: Any faulty implementation of data shredding algorithm will not erase your data, which can be further accessed by hackers. The worst could be it can damage the data section which you do not intent to secure erase.

Setting up Shreddit

Shreddit requires to follow some simple steps to setup the shredder when launched first time on the android device. The data shredder requests storage device permissions to perform shredding job. The app also shows contextual tooltips when launched first time to guide how to use the shredder.

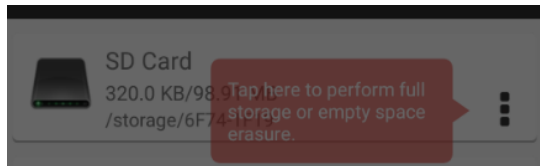
First Launch

Step-1: When launched first time the shredder would ask for permission to access photos, media, and files on your device. If the permission is not granted the shredder cannot perform it's job. Please click 'ALLOW' to start working with the shredder. *This dialog only appears on android marshmallow (6.0) and onwards.*



For android 5.0 and 5.1 the permission is requested at install time only.

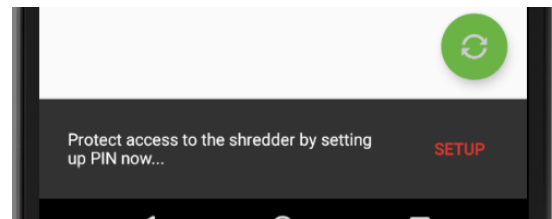
Notice the contextual tooltip about how to start the shredding job for the specified storage device.



The tooltip appears only once and can be dismissed by

tapping at any location on the screen.

Step-2: This is optional step but it is highly recommended to setup the PIN for the shredder. This would protect from any accidental or un-authorized shredding operation. The prompt appears on the bottom of the first screen requesting to setup the PIN. If you dismiss the prompt, you will not be asked again for setting up PIN.



Shredder protection

Protecting shredder is very important to avoid any accidental erasure or any un-authorized access to the shredder. The shredder PIN also protects the shredder from toddler's access. If you leave the shredder without PIN on your device, it can result in the data lost which was not intended.

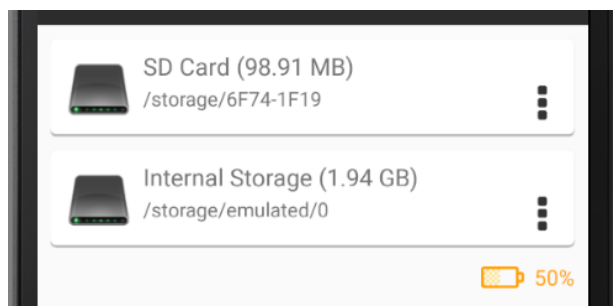
NOTE: *PIN can be setup later from 'Settings > Security > Setup Shredder Lock'*

Storage Devices

Shredder built in file browser reads your mounted devices and list them on device storage activity. This is the very first screen on the shredder. The device mounting mechanism is smart and detects your external storage automatically when mounted or removed.

Listing Storage Devices

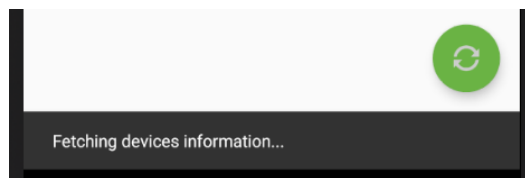
The first screen here mounts your internal and external storage with their mount points path and their total capacity (or size). The device with name 'Internal Storage' is the device's internal partition which contains your app cache's (like your banking app), your gallery data, downloaded files, and other popular apps folders like Whatsapp, Facebook, Skype, Instagram etc.



If there is external SD card mounted on the device, it is also listed here. Shredding commands can be issued from this device listing to the mounted devices.

Mounting Storage Devices

Shredder has a mechanism to automatically mount or un-mount the storage devices, when the SD card is inserted in the external card slot and Shreddit is launched it automatically adds the newly added storage device to the listing. Same is true when the device is un-mounted from the external card slot.



Storage device list can manually be refreshed by clicking the green floating refresh button.

Recommendation: It is highly recommended not to remove the storage when shredding is under progress.

Permissions

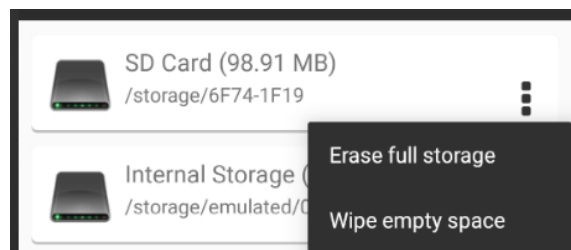
If the permission to read/write the media and files is granted the data shredder can perform full erase and empty space erasure on 'Internal Storage', for external SD card mounted on *Android 4.4 KitKat* onwards it can only perform *empty space wipe*. To handle SD cards on rooted devices please see the section "Shredder for Rooted Devices"

Storage Devices Shredding

Storage devices can be shredded via two different mechanisms. Whole device or partition erase or erasing empty space.

Whole Device Erasure

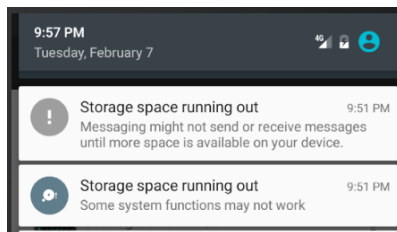
Whole device erasure is suitable when you are about to discard or sell your device. This shredding scheme destroys whatever is there on your internal storage device. This includes your *app caches*, *gallery caches*, *personal documents* and your *media files*. After performing this shredding, you should have peace of mind that no data residing on your device can be recovered or accessed by anyone.



Empty Space Erasure

When device storage is formatted or devices cache has been cleaned using some third-party app, all the files are mark deleted but the content is moved in to the free space. Android OS uses this free space for any new coming files. To secure erase your data (which is now living in free space), this kind of scheme is highly recommended for such scenario.

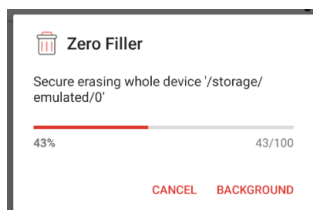
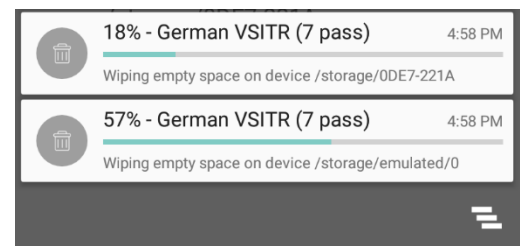
PalmTronix is planning to give its users a free app to securely clean the android cache.



CAUTION: Your android might show notification or alerts about storage space running out. This happens when the shredder acquires your empty space to perform deep erase. The space on storage is immediately released on free space shredding completion.

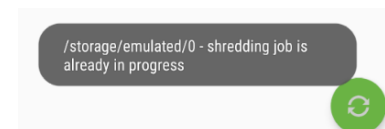
Simultaneous Shredding Jobs – Only Beta

The data shredder has a very sophisticated design to kick start more than one shredding operation at the same time. This kind of framework makes the shredder a unique tool to target more than one storage devices (or partitions) and saving great deal of time. See the screen shot taken from Nexus 10 where two shredding jobs are executing at the same time.



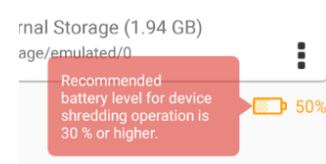
To start more than one jobs at same time please move the current shredding job to 'Background'. Once moved to background the shredding progress is moved to notification bar. Now you can start another shredding job on 2nd storage, by clicking on popup menu associated with the storage device.

Please note you cannot start shredding on the same device if there is already shredding under progress. This would give you a prompt that the shredding job is already in progress for the selected device.



Managing Battery and Power

Managing battery while shredding job is under progress is very critical, if a long shredding job is initiated with battery below 30% you can end up breaking shredding operation in between. Consider a 7-pass shredding algorithm wiping the device with 32 GB capacity. It can take significant amount of time which can drain your battery before your shredding job completes. This can throw your device in unstable state. Though shredder tries to clean things up when



device is rebooted. Even then it is highly recommended that you watch your battery levels before you start any shredding job. The device listing android activity shows the battery status with different color coding. Tapping on the battery icon shows contextual tooltip about battery.

Recommendation: If your battery is 30% or below, attach a power source to your device before starting any shredding operation.

Shredding and Power Management – Best Practices

To achieve optimal performance out of the shredder please do follow these practices. These steps can protect you getting into the problematic situation when performing heavy shredding jobs i.e. 35 pass random filler on internal or external memory of **64GB** or **128 GB**

Turn off data network and WIFI

It is highly recommended to put your *internet radios* off, whether it is data network or wifi.

Disconnecting from internet can release lot of memory pressure from your device. Switching off these radios can help extend the battery life during shredding operations.

Close all other applications

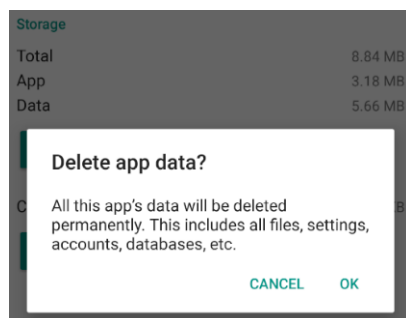
Please switch off other applications, it is not recommended to record videos or capture pictures while shredding job in progress. Close all gaming applications from your device.

Hook your device to power adapter

If your device's battery is not running on optimal performance, it is always recommended to put your device on AC adapter before starting any shredding operation i.e. whole device shredding or empty space shredding.

Choosing Appropriate Scheme

It is a legitimate question to ask that what mechanism to choose? If you are selling your device or you are a business discarding your devices it is highly recommended that you perform **'Erase full storage'**.



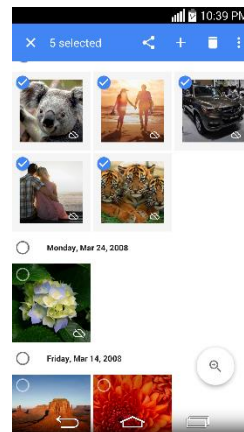
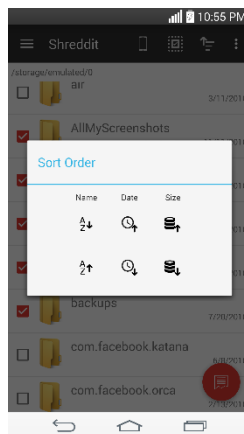
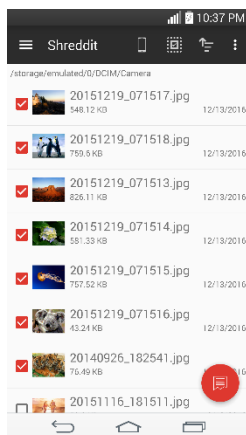
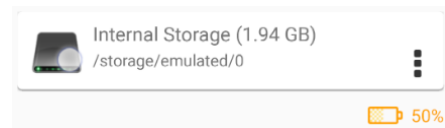
If you have formatted your internal or external storage, then there is no way to access blocks of your deleted data. In this scenario content of all deleted devices is now residing in empty space. Please choose **'Wipe empty space'** in such situation. *One hypothetical scenario is where you cleared the data cache of your banking app, the data generated by the banking app is not securely erased (as clearing cache uses android's normal delete service). Use **empty space wipe** to destroy the sensitive data residing in free space.*

Files and Data Shredding

Apart from shredding your storage devices and having different mechanism for performing shredding, it is good to have exclusive control on the files or directories you want to erase. There are some powerful light weight tools built in with the app to give provision for file shredding.

Using Built-in File Browser

Data Eraser has a built-in file browser (or file manager) to load content of your selected storage device. Accessing the browser and exploring through your files is very easy. Click on the storage icon to open the file browser for selected storage device. The path of the selected storage device or directory is shown at top of the files listing.



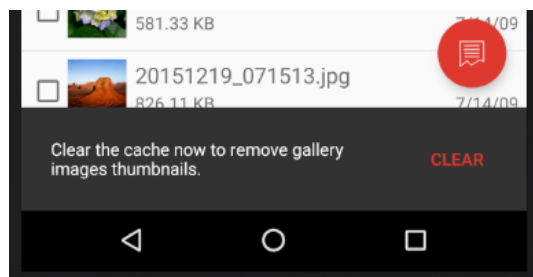
Secure erasing files is twofold step, **1-** Select the file or directory by using the check box and then **2-** Use the round floating shredder button to start shredding for selected files.

Media Files

File browser shows the high-quality thumbnails for media files (images and videos), this allows you to select video or images you want to shred without requiring assistance from any other third-party applications.

Gallery Cache Cleaning

Shreddit detects that if there is any media file in list of files you are shredding, if any media file (image or video) is detected it tries to clean the cache. If the shredder is not able to access cache directory it requests user to clear the cache and shows the prompt to open the gallery cache settings.



NOTE: Recovery software uses the gallery cache to recover the images. Clearing the gallery cache via shredder is important to remove any images cached inside gallery app.

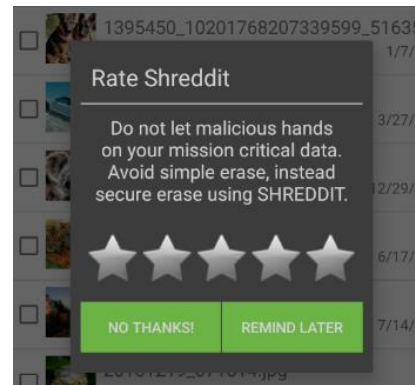
Normal Files

All non-medial files for instance your documents and other file types are shredded normally and requires no special treatment like media files.

Rating App

On completion of any shredding operation like free space wiping, or shredding media files the android data shredder request to submit the review for the app. The custom designed rating dialog is shown to the user, this dialog also displays the *shredding tip of the day*. Please do consider dropping feedback, your review helps improving the product.

NOTE: The shredding product avoid using ad-engines, ads are third party piece of software injected inside app. This shredder is designed to stand guard for your privacy and hence should avoid ads. Your rating really matters to continue development on the shredder.



Shredding Algorithm

The data erasing tool uses state of art designed data shredding algorithms. Specifically designed to work for devices internal memory or SD cards.

Standardized Shredding Techniques

Shreddit implements the standards of data sanitization techniques which have been developed after decades of research. Below is the list of key data shredding standards used by the tool.

British HMG IS5 (3 pass).

This shredding standard overwrite every sector with sequence of 1s, then every sector is overwritten with 0s and final pass deploys random sequence of 1s and 0s.

US DoD 5220.22 (3 pass).

Please find the details for this standard at this [wikipedia](https://en.wikipedia.org/wiki/DoD_5220.22-M).

The DoD 5220.22-M revision deploys three passes on media or storage device sectors.

1. Writes zeros and verifies the write
2. Writes ones and verifies the write
3. Writes with random buffer and verifies the write

German VSITR (7 pass).

This shredding standard overwrite every block of storage with three alternating patterns of 1s and 0s and in final pass it overwrites every sector with character. Every write operation is verified in all seven passes.

Russian GOST P50739 (2 pass).

In first pass, it writes every block of the storage device with 0s and then with random sequence of bits.

Bruce Schneier (7 pass)

In first pass the sector of target media is written with sequence of 0s, second pass with 1s and in next five passes, five sequences of random numbers is written on media sectors.

NIST 800-88 (2 pass)

Please check NIST.SP.800-88 revision1 at this [link](#).

Recommendations: If you are government then please check your respective standards and deploy appropriately.

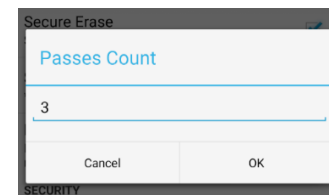
Recommendations: If you are *business* or *enterprise* looking to sanitize your devices securely, please do consider to select 7 pass algorithms.

Custom Shredding

There are other shredding options to choose from, they can be of help if you are forensic expert or R&D. This can help you to perform experiment with basic shredding buffers;

1. Random Filler (Randomness depends on your device hardware and android version).
2. Zero Filler (This is fixed size buffer with all 0x00).
3. One Filler (This is fixed size buffer with all 0x11).

You can also specify that how many number of times or passes any filler can be applied. Please go to “Settings > Shredding Options > Passes Count” to specify number of passes for any selected filler. This setting only applies to these above-mentioned categories and cannot be applied to standard *shredding algorithm*.



How Choose Shredding Standard

Choosing shredding algorithm is dependent on your requirements whether you are doing for personal use, for business or corporate or whether for government. The choice of method affects reusability. Four different possible outcomes are considered as;

1. Reuse of media in a similarly secure environment;
2. Reuse of media in a less-secure environment (accredited at a lower IL);
3. Reuse anywhere (i.e. an untrusted or unknown environment);
4. Destruction.

Recommendation: If you are *business* or *government* then please deploy algorithm as per your institution requirement for data sanitization. Please refer to your organization’s IT security policy.

Shredder Security

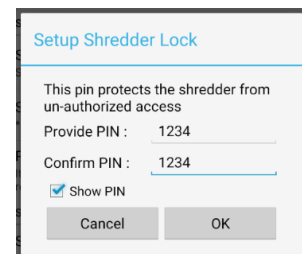
Why is there a need to protect a software which protects your data privacy? This protection is required in multiple different scenarios. You would not want any un-authorized access to the shredder, any malicious user can perform data shredding without your consent and destroying your mission critical data.

Shredder can launch accidentally, like if your phone is not locked in your pocket or a toddler access the phone and lands to the shredder accidentally.

Setting up PIN

The data shredder request for PIN when launched first time on the device. You can setup the PIN from there as explain under the section “First Launch”. If you have skipped setting up at that time, the PIN can be setup from settings section.

Go to “**Settings > Security > Setup Shredder Lock**”, a dialog would appear. Now provide the PIN and confirm the PIN in the second field and press OK. You can press “Show PIN” to see what is your PIN lock.



NOTE: PIN should must be at least 4 digits. PIN cannot be removed once setup. Please deploy appropriate means to back up your PIN.

Providing PIN

Once you have setup the shredder lock (or PIN), you will be prompted to provide the PIN to get into the app. Notice the shredder will automatically take you to the device listing activity once PIN matches. If PIN is wrong the app will not allow you to proceed further.

Restoring Lost PIN

Please contact support if you have lost the PIN. The first authentication dialog guides you to the support email link in case of lost PIN. *Consider removing and then installing app again if you have lost the PIN.*

Preferences and Customization

Shredding Options

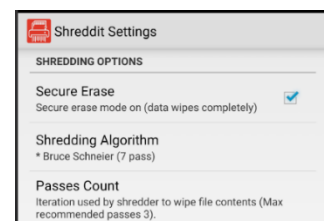
General shredding options.

Secure Erase

Setup the secure erase mode ON or OFF, if set ON then deep erase will be performed when erased from built in file browser or using gallery app. The app can be used as normal bulk delete app if the mode is set to OFF.

Shredding Algorithm

Allow to select one of the supported shredding algorithm from the list.



Passes Count

Number of passes to be used while shredding using Random Filler, Zero Filler or Ones Filler.

Security

Setup Shredder Lock

Allow to setup the shredder lock, please refer to the section “Shredder Security” for details.

Explorer Options

General file browser options.

Browse up via back button

Uses device back button to navigate to parent directory if switched on. Otherwise a dedicated button is added in file browser toolbar to navigate to parent.

Show hidden filesystem entries

It is switched on by default, this shows the hidden files and folders in file browser if switched on.

Directory Launched at Startup

Which directory to launch at startup, this option can be used to set the external SD card path if the shredder is unable to fetch the external storage.

Limitations and Workarounds

On devices not rooted the shredder cannot perform file erase and full device shredding on external SD cards. Though there are work arounds to perform full device shredding on SD cards.

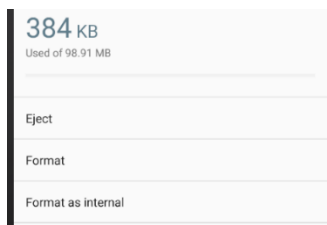
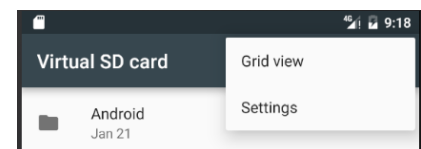
Shredding SD Card

Android Marshmallow (6.0)



Please go to your android device “Settings > Storage & USB > Portable Storage”

Select the SD card. Click on options menu and go to “Settings”



Then select “Format”, this would erase any content on the card. Please be-aware that this erase is not deep erase. Please get back to shreddit and issue “Wipe empty space” on SD card.

Shredder for Rooted Devices

With little tweaking the shredder can easily be used on rooted devices without any limitation on external storages.

Erasing SD Card

Erasing SD card on rooted devices is possible. Please follow these simple steps to make Shreddit work on your SD card.

Handling on KitKat 4.4

Please install the app [SDFix: KitKat Writable MicroSD](#), this requires your device to be rooted. Once you have unlocked your SD card using this app, restart your android device and you are good to go.

Setting up for Android 5.0 and onward.

For Android 5.0 (Lollipop) and onward you must follow different steps to make Shreddit work on your SD card.

1. Install the data shredder [Shreddit](#)
2. Install this app [/System/App Mover](#)
3. Make Shreddit the system app (Device must be rooted)

NOTE: Thanks to one of our user for finding out this workaround on lollipop devices 😊.

FAQs

- Is Shreddit freeware?
 - Yes, it is freeware
- Does app contain ads or any other third party software collecting my data?
 - No app contains no ads or other third party software
- Can I perform empty space secure erase?
 - Yes, you can
- What happens if device restarts during shredding operation?
 - App stabilizes your device on reboot and releases any temporarily acquired space
- Can I perform full internal storage secure erase?
 - Yes, you can
- Does the shredder has lock (or PIN) mechanism?
 - Yes, it is lock protected which can be setup
- Can I perform simultaneous shredding job on internal and external storage?
 - Yes, multiple jobs can be setup by moving existing job to background
- Is there any shredding limit in terms of number of files or file sizes?
 - No there is no limit for now
- Can I switch off secure erase mode?
 - Yes, you can. If switched off shredder uses normal delete function
- Can I launch shredder in safe mode?

- Yes, by switching off secure erase mode.
- Does the data erasing tool keep eye on battery level?
 - No, it just shows the state of battery with appropriate color coding. Please plug power adapter before scheduling long shredding jobs if battery is below 40%.
- Does data erasing tool stop shred for low battery level?
 - No, it does not stop, it merely throws the warning.
- What if shredding job is under progress and device turns off.
 - App take care of performing clean job when device boots.