Android and SD Cards

Many Android handsets (with few exceptions) are equipped with a microSD slot. Installing an SD card is a cheap and easy way to expand your phone's storage capacity. In modern versions of Android, SD cards can only be used for certain purposes such as storing music, pictures and videos. Some applications can keep some of their data on an SD card. For example, many offline navigation apps can store downloaded maps on an SD card; some larger games can keep their files on the external SD, and so on.

Most importantly, you can easily configure your device to save all pictures and videos captured by the phone's camera onto the SD card.

Unlike the internal storage, for SD cards Android uses a standard FAT file system. For micro SDHC cards (4, 8, 16 and 32GB) the standard requires using FAT32, while larger SDXC cards (64GB, 128GB and the newest 200GB units) are formatted with exFAT.

What are the differences between FAT32 and exFAT?

FAT32 is a desktop file system that goes back some years to the ancient Windows 95 OSR2. This file system was designed to help use hard drives larger than 2GB (yes, that's two gigabytes, not terabytes!) FAT32 is simple, lightweight and easy on resources with no journaling, no security features and no other features many modern file systems have. However, in practical terms, FAT32 is very limited. In particular, it limits maximum file size to only 4GB. With many full HD movies being larger than that, FAT32 became impractical for using on larger media.

To overcome the limitations of the aging FAT32, Microsoft has developed a new file system from scratch. exFAT supports huge volumes and file sizes. exFAT is a de-jure and de-facto standard for SDXC and micro SDXC cards, so any 64GB and larger card comes pre-formatted with exFAT (as per official specifications).

However, exFAT is legally restrictive. Microsoft has never released the complete exFAT file system specification. The company collects licensing fees from companies who wish to include exFAT support into their products, and filed a large number of patents that make re-implementing exFAT functionality extremely difficult without violating at least one of them. For this reason, exFAT (and 64GB SD cards) is not supported in many entry-level devices.

Now when you know everything about SD cards in Android, how do you actually recover the data? The steps are easy:
- Turn on your phone or unmount the SD card via Settings – Storage – Unmount SD card (there is no need to unmount if you switch off the device);
- Take the card out;
- Download and install one of the following data recovery tools: Magic FAT Recovery, Magic Partition Recovery, Magic Photo Recovery, Magic Uneraser;
- Launch the data recovery tool you've just installed. Specify drive letter corresponding to your SD card, and click through the Recovery Wizard to automatically locate, preview and recover the files.