

PIN Management Strategies App

The app PIN Management Strategies is designed to help you to memorize your Personal Identification Numbers (PINs) by suggesting some strategies based on your individual PIN. The PIN itself will not be saved in the app. The app only provides tips and strategies, that also can be found in this leaflet.



The app offers the opportunity to practice the PIN input for the strategies you've chosen. It does not need permission to access other functions and stores the PIN only for the period of determination, display and exercise while you practice using the app. Afterwards it will be deleted. To ensure Preserve PIN secrecy, it is not possible to take screenshots of the strategies. The app is one of our Privacy Friendly Android Apps.

Download the PIN Management Strategies App

The app PIN Management Strategies is available for free download from the Google Play Store and the F-Droid open source software store:



App in the Google Play Store

<https://secuso.org/pfa-pin-merkstrategien-playstore>



App at F-Droid

<https://secuso.org/pfa-pin-merkstrategien-f-droid>

Background to the F-Droid Store for open source software

The F-Droid Store is an alternative app store for Android Apps, which only offers apps that are "open source" and free. It is possible to view publicly the source code of any app offered in F-Droid. In addition, the apps are compiled by F-Droid itself and the code is examined for security and privacy issues.

More Privacy Friendly Apps

You can download several of our Privacy Friendly Apps:



More PFAs in the Google Play Store

<https://secuso.org/pfa-playstore>



More PFAs at F-Droid

<https://secuso.org/pfa-f-droid>

Contact

Karlsruhe Institute of Technology (KIT)

Institute for Applied Informatics and
Formal Description Methods (AIFB)

Research Group Security • Usability • Society (SECUSO)

Prof. Dr. Melanie Volkamer
Kaiserstraße 89, Bldg. 05.20
76133 Karlsruhe, Germany

Phone: +49 721 608 450 45

Email: kontakt@secuso.org

www.secuso.aifb.kit.edu

facebook.com/secuso

twitter.com/secusoresearch

Issued by

Karlsruhe Institute of Technology (KIT)

President Professor Dr.-Ing. Holger Hanselka
Kaiserstraße 12

76131 Karlsruhe, Germany

www.kit.edu

© SECUSO 23/01/2019

© The document is protected by copyright.

The content of this leaflet is based on research findings, which were developed by the research group SECUSO at TU Darmstadt and have been further developed since 2018 at KIT. The leaflet is funded within the KASTEL project funded by the Federal Ministry of Education and Research (BMBF). The research was conducted in collaboration with Prof. Dr. Karen Renaud.

PIN-Management

How you can easily memorize PINs

INSTITUTE OF APPLIED INFORMATICS AND
FORMAL DESCRIPTION METHODS (AIFB)



SECUSO
SECURITY · USABILITY · SOCIETY



Here you will get tips on how to remember your newly obtained Personal Identification Numbers (PINs) more easily as well as tips for the safe handling of your PIN. Take your time and repeat the PIN several times with the help of the most suitable of the following concepts. You can also use SECUSO's Privacy Friendly App, which was developed based on the PIN Management Strategies mentioned here (see the PIN Management Strategies app on the back of the leaflet).

Tips that may help you to remember the PIN you received

1. Pattern on PIN pad

Remember the pattern created by the PIN on the keypad. For example 2589 – forming an L, that starts with the number 2.



L-Pattern on PIN pad

2. Associate with a date



Remember a familiar date. Check your PIN to see if you recognize a familiar date that can be made up from numbers.

3112 – New Year's Eve

3012 – Day before New Year's Eve

1989 – the fall of the Berlin Wall

3. Associate with another number

Check if your PIN is a familiar combination of any numbers you already know. The combination of numbers could appear in your phone number, post code, license plates and other numbers that you are familiar with. For example, 0615 might be a familiar sequence from your phone number.

4. Use arithmetic

Remember a mathematical equation. For example, from 1236 you can derive the equation $1 + 2 + 3 = 6$ and from 4812, $48/4 = 12$. Also, check if you recognize a different mathematical structure in your PIN, such as for example, 2357 are the first primes.

5. Make up a story

Invent a story based on your PIN by using the sequence of numbers. For example: 4511 – I am holding a clover leaf (4 leaves) in my hand (5 fingers) and go to a football match (11 players).



The app PIN Management Strategies supports you with sample images of your entered PIN. For example, when entering the PIN 8341 the following picture example is displayed:



The story for the example of the PIN 8341, which you would like to memorize, could be the following: When playing Billiards (Black 8) you always put the balls together (in the 3-sided triangle). This brings luck (4-leaf clover), because you always win (Medal with No. 1).

6. Associate with a word

Many PIN pads are provided with letters as well. You can memorize your PIN with a word – e. g. 5463 corresponds to the word "LINE" on the PIN pad. If the number 0 appears in your PIN, you could form a word with the letter O.



Word pattern on PIN pad

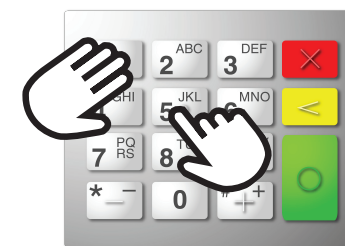
Be careful, some PIN pads don't have letters. In this case a look at your phone keyboard might help.

General Advice

After you have chosen one (or more) of the strategies given above it is helpful to repeat the PIN several times to memorize it. For example, you can trace the numbers on the keypad illustration in the leaflet with your finger or practice by using the app PIN Management Strategies.

Tips to make sure you are not observed while entering your PIN

Cover the PIN pad with your hand. Be aware that you could also be observed by cameras. The observers could record you when you enter your PIN in the supermarket, in the restaurant or at the ATM.



Cover the PIN pad

Tips in case you are worried that you will not be able to remember your PIN

Store your PIN as an entry in your address book, but do it safely.

When writing down or storing the PIN on your phone (e. g. in the address book), make sure you change it before entering it. You can use different cover-up tactics. For example: change 7389 to 9837 (read backwards) or to 6278 (subtract 1111).

$$\text{PIN} = 7389 - 1111 = 6278$$

Tips in case you may choose your PIN

Usually you are able to change your PIN and choose the numbers yourself. If you decide to change your PIN, please follow the following rules:

1. Do **not** use your birthday or that of a close relative or friend;
2. Do use **at least** three different digits;
3. Do **not** use four consecutive digits (e. g. not 2345).

The reason for this advice is that adversaries are likely to try out first those numbers which are very easy to remember.