IAIK TU Graz

Mobile Security

SS 2022

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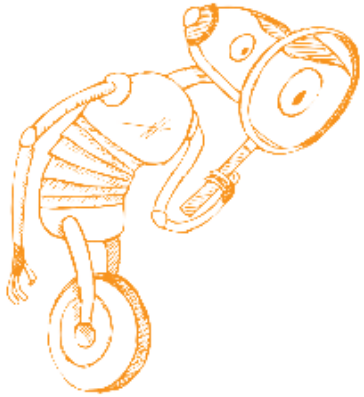
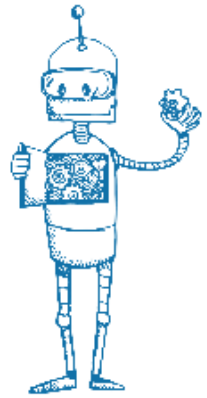
Slides based on those by **Johannes Feichtner**

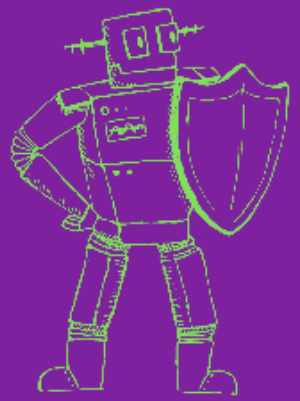
WE **UNITE RESEARCH** ON ALL ASPECTS OF INFORMATION SECURITY
TO **FIND ANSWERS** TO THE PRESSING SECURITY CHALLENGES.



FORMAL
METHODS

SECURE
SYSTEMS

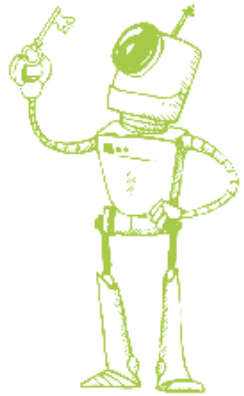




SECURE
APPLICATIONS

Tools and Innovations
for Security

CRYPTOLOGY &
PRIVACY



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SECURE APPLICATIONS

Team Tauber

EGIZ is a research group at IAIK that consists of a young and dynamic team. A high level of expert knowledge in many areas of information technology is necessary for further developing eGovernment. EGIZ supports the Federal Ministry for Digital and Economic Affairs in further developing the ICT strategy of the federal government. We are driven by advancing technologies in the field of identity management, digital signatures and other security technologies in eGovernment, like electronic delivery. For the latest research projects see the EGIZ Demo Portal.

Team Members

Arne Tauber
Emina Ahmetovic
Lukas Alber
Florian Draschbacher
Jakob Heher
Felix Hörandner
Stephan Keller
Thomas Lenz
Stefan More
Blaz Podgorelec
Christof Rabensteiner
Bianca Rosemarie Danczul
Kevin Theuermann

Team Lipp

With our long reputation as a pioneer in security software development, we provide a comprehensive set of crypto products for the Java™ platform that helps you make your environment and applications more secure. While we focus on the areas of eID, eSignatures and PKI where we are also involved in standardisation activities, our implementations cover underlying crypto, from AES via elliptic curves to post-quantum methods up to protocols like TSL, tools like policy-driven automated trust verifiers or applications like certification authority software. Whenever ready, our partner, Stiftung SIC, is responsible for all sales of these products.

Team Members

Dieter Bratko
Harald Bratko
Otto Gerald Touzil
Fabian Gruber
Simon Guggi
Franco Nieddu

Team Leitold

The A-SIT team's research at IAIK is driven by information security needs of the public sector, like in eGovernment. We are thrilled by exploring technologies that help advance the public sector secure electronic service offerings. We have expertise in basic building blocks like electronic signatures and electronic identity. With mGovernment initiatives and mobile-first strategies, a current research focus is on mobile security, like on app security analysis. We also research on the role of emerging concepts like distributed ledger or peer-to-peer infrastructures in public services. For some recent results see the A-SIT Technology Server.

Team Members

Herbert Leitold
Edona Fasllija
Christian Kollmann
Dominik Mocher
Gerald Palfinger
Reinhard Posch
Bernd Prünster
Peter Teufl
Thomas Zefferer

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A-SIT

https://www.a-sit.at

- Members
  - Federal Ministry of Digital and Economic Affairs
  - Federal Computing Centre
  - Graz University of Technology
  - Danube University Krems
  - Johannes Kepler University Linz

- IAIK: IT Security Research
- A-SIT: Practical aspects + Counseling of public institutions

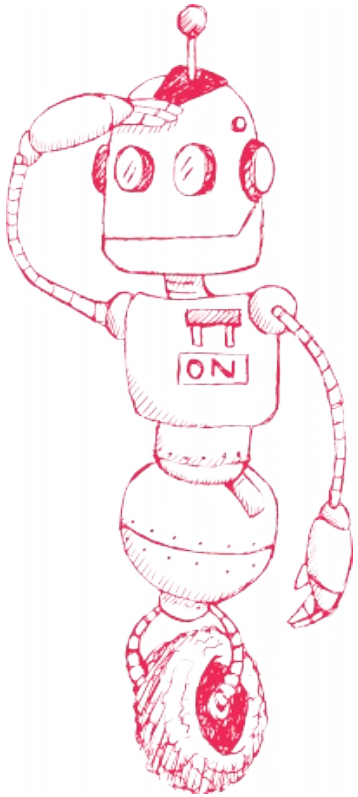
Myself

- A-SIT @ IAIK
- Current focus
  - Mobile Security
  - Android and iOS
  - Crypto API Misuse
  - Application Patching
- Lectures
  - Mobile Security (MobileSec) VO & KU
- Seminar projects, theses

Course Facts

Lecture (705.012)

- Registration Deadline: 20.03.2022, 23:59
- 3 ECTS credits
- Elective master course (+ part of InfoSec catalog)



Assignments (705.013)

- Deadline as above
- 2 ECTS credits

Course Organisation

Lecture

- Fridays, 10:00 to 12:00
- English

Assignments

- Fridays, 12:00 to 13:00 **but** discussions only, no general „topic“ or lecture
- Your task: ***Do research and fast prototyping***
- You are welcome to suggest your own project ideas!
- Could be a seed for theses, projects, and further research

MOBILE SECURITY (SS 2022)

Course Number 705012 and 705012 | Sommersemester 2022

Content

This course is a seminar-style class which focuses on security aspects of mobile devices. We study the security mechanisms of smartphones and show how to employ them to protect sensitive information. Based on that, we analyze mobile applications regarding security-critical deficiencies, examine platform and application vulnerabilities and discuss how they can be exploited by attackers.

- Security features of mobile platforms, e.g. Android, iOS, …
  - *Access protection (PIN, Patterns, …), Secure Element, OS updates, permissions, sandboxing, …*
  - *Which mechanisms are provided in order to protect sensitive data?*
  - *How do they work?*
- Key and data storage on mobile devices
  - *Device encryption, key derivation functions, key management, risks*
  - *Which kind of keys do you manage on your device?*
  - *In practice, what are the risks you have to cope with?*

Lecturers

Florian Draschbacher

Table of Content

https://iaik.tugraz.at/mobilesec/

Assignments

- Two subsequent tasks
  - The first to do individually
  - The second to do in a group of max. 3 people

  → For a positive grade, >= 50% per assignment needed!

- Your creativity, skills, and ideas form an integral part

- Focus on research, fast-prototype oriented work
  - Can serve as basis for future projects, theses, etc

Assignment - Task 1

To solve individually!
(no group work)

Soft introduction to application analysis

- Requirements:
  - Acquired in „Computer Organization and Networks“ / „Information Security“
  - Man-in-the-middle (MITM)
  - Certificate Pinning

Analyze a set of Android or iOS applications

- Find out if they are susceptible to MITM, make use of Pinning
- Reverse Engineering
- Task details on course website and in next week‘s lecture

Submit your results until 10.04.2022 and explain your findings

Assignment – Task 2

Max. group size: 3

- Topics will be suggested but
  - You are very welcome to bring in your own ideas, related to the lecture!

- Decide on a topic until 28.03.

- Final presentation: 10.06.
  - Hand-in: 08.06.

- Grading depends on contribution / results

Next Steps

- Register to the lecture and assignments courses until 20.03., 23:59.
- Assignments – Task 1: Think about apps you would like to analyse
  - Early start is possible ☺
- Assignments – Task 2: Think about a topic you would like to work on
  - Choose from the list of topics or propose your own subject
  - Decide on one until 28.03.

Getting to know you

fbr.io/mobsec

What is your experience with Mobile Security?

Getting to know you

fbr.io/mobsec

What are your expectations for the lecture?

Questions?