MTAT.07.017
Applied Cryptography

Introduction

University of Tartu

Spring 2023

Who am I?

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MSc in Cyber Security
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Teaching Assistant

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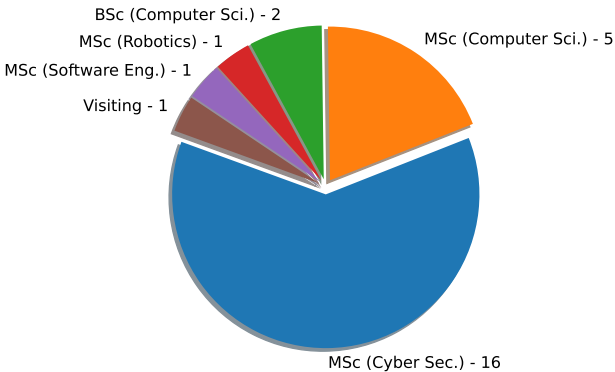
MSc in Software Engineering
University of Tartu

Junior Lecturer of Software Security

Please contact him on all course-related matters!

Who are you?


BSc (Computer Sci.) - 2
MSc (Robotics) - 1
MSc (Software Eng.) - 1
Visiting - 1
MSc (Computer Sci.) - 5
MSc (Cyber Sec.) - 16

This course

- Practical hands-on course, no math

Course timeline:

- [2023-02-04] 1: Randomness, PRNG, One-Time Pad, Stream Cipher
- [2023-02-11] 2: Abstract Syntax Notation One (ASN.1)
- [2023-02-18] 3: Hash functions and HMAC
- [2023-02-25] 4: Block ciphers (AES)
- [2023-03-04] 5: Public Key Cryptography (RSA)
- [2023-03-11] 6: Elliptic Curve Cryptography (ECC)
- [2023-03-18] 7: Public key certificates (X.509)
- [2023-03-25] 8: Revocation checking (CRL/OCSP)
- [2023-04-01] 9: Digital signatures (XAdES)
- [2023-04-08] 10: Smart cards (EstEID)
- [2023-04-15] 11: Smart cards (JavaCard)
- [2023-04-22] 12: Transport Layer Security (TLS)
- [2023-04-29] 13: Transport Layer Security (TLS)
- [2023-05-06] 14: The Onion Router (Tor)
- [2023-05-13] 15: Bitcoin
- [2023-05-23] Online test

*6 ECTS – 26*6=156 hours (10 hours weekly)*

Grading

- Homework every week
- Homework assignments give maximum 70% of the final grade
- Deadlines are strict!
  - Homework deadline – Saturday 23:59:59
  - Late submissions get 50% penalty
  - Homework submitted later than 1 week after the deadline is not accepted!
- Test gives another 30% of the final grade
  - Should be easy if you follow the lectures

Homework submissions

- Homework tasks must be implemented in Python 3
  - Test environment: Ubuntu 22.04, Python 10.x
  - Python packages from Ubuntu package repository (not `pip`)
- Create a private Bitbucket repository and grant me 'read' privileges:
  `https://bitbucket.org/appcrypto/2023_spring/src/master/setup/`
- Add your repository to the course grading page at
  `https://appcrypto.cs.ut.ee/appcrypto2023_spring/`
- Homework templates will be published at the course repository:
  `https://bitbucket.org/appcrypto/2023_spring/`
- Feedback will be given using code comment feature
- Teaching assistance over e-mail not available
  - Practice session: Tuesdays 12:15-14:00, via Zoom
  - Slack channel
- Do not collaborate or look at the homework solutions of others!

Academic fraud

- It is academic fraud to collaborate with other people on work that is required to be completed individually.
- The homework tasks in this course are required to be completed individually!
- You can help your peers to learn by explaining general concepts, but don't provide them implementation details or your own work!
  - If you don't see the borders – work alone.
- Copying code samples from internet resources (e.g., stackoverflow.com) may be considered plagiarism:
  - the most basic building blocks may be OK
  - combination (composition) of building blocks is NOT OK
  - If you don't see the borders – limit yourself to Python API documentation.