Secure Software Development – SSD

Handout Defenselets

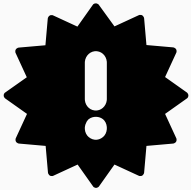
19.10.2022

Winter 2022/23, www.iaik.tugraz.at/ssd

Agenda

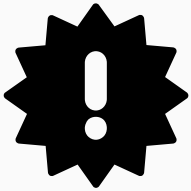
- Handout of Defenselets
- Q & A

Deadlines



- Warmup:
  - Deadline: ~~19th of October 23:59 (19.10.2022)~~ 25th of October 23:59 (25.10.2022)
  - Tag: `warmup`
- Defenselets: (handout today)
  - Deadline: 15th of November 23:59 (15.11.2022)
  - Tag: `defenselets`
- Defensive Programming 1:
  - Deadline: tba at handout
- Defensive Programming 2:
  - Deadline: tba at handout

Deadlines



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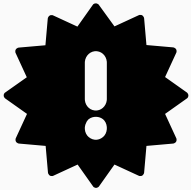

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- Test System:
  `https://sase.student.iaik.tugraz.at/`
- Practicals: `https://www.iaik.tugraz.at/teaching/materials/ssd/practicals/`
- Defenselets: `https://www.iaik.tugraz.at/teaching/materials/ssd/defenselets/`

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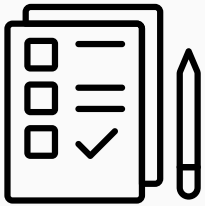
Defenselets



- 12 Defenselets
  - cowsay (2 Points)
  - you_shall_not_rop (2 Points)
  - fast_encryption (3 Points)
  - tugonline (2 Points)
  - dictionary (2 Points)
  - echo (2 Points)
  - matrix_multiplier (2 Points)
  - breadbank (4 Points)
  - muschelkalk (4 Points)
  - router (5 Points)
  - confused (5 Points)
  - tasklist (6 Points)
- Same programs as the lecture hacklets
- Points overall: 39

- Simple echo program that prints an ASCII cow
- Points: 2
- Deliverables:
  - Fix all memory safety vulnerabilities

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- Points: **2**
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- Simple echo program that prints an ASCII cow
- Points: **2**
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- A program that tries to mitigate a vulnerability, but doesn't fix it.
- Points: 2
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- A program that tries to mitigate a vulnerability, but doesn't fix it.
- Points: 2
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- A program that tries to mitigate a vulnerability, but doesn't fix it.
- Points: **2**
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- A really fast multithreaded encryption program
- But the encrypted data can only be read by the admin user
- Points: 3
- Deliverables:
  - Fix all vulnerabilities that allows non-admins to read the flag

Fast Encryption

- A really fast multithreaded encryption program
- But the encrypted data can only be read by the admin user
- Points: 3
- Deliverables:
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- A course management program for a university
- But apparently somehow you can get negative ECTS?
- Points: 2
- Deliverables:
  - Fix all vulnerabilities that allow you to get negative ECTS

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- An implementation of a dictionary data structure
- Points: 2
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- An simple server that echoes back what you send it
- Points: 2
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Echo

- An simple server that echoes back what you send it
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  - Fix all memory safety vulnerabilities

- An simple server that echoes back what you send it
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- Matrix multiplication program for dynamically sized matrices
- Points: 2
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- Object-Oriented bread store application
- Points: 4
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- Points: **4**
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- Calculator application that takes native CPU instructions as input
- Some instructions are filtered, but is it secure?
- Points: 4
- Deliverables:
  - Add proper sandboxing to the calculator application

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- Secure LTE router firmware
- The router generates a new password every boot
- Points: 5
- Deliverables:
  - Fix all vulnerabilities that allow a user to figure out the PIN

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- Confusing scripting interface that can only add numbers and concatenate strings
- Points: 5
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- A TODO list management program
- Points: 6
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Demo

Questions?