Course Guidelines

REVERSE ENGINEERING

deti universidade de aveiro
departamento de eletrónica, telecomunicações e informática

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Faculty

- João Paulo Barraca – jpbarraca@ua.pt
  - IT – Telecommunications and Networks - Aveiro
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  - IEETA - Intelligent Robotics and Systems
- José Luis Azevedo - jla@ua.pt
  - IEETA - Intelligent Robotics and Systems

Operational aspects

- Lectures in a mixed format: remote + in place (if possible)
  - According to the pandemic situation and actual lecture contents
- Contents: everything available in the Teams Channel
- Languages:
  - Classes may be lectured in English, but will default to Portuguese.
  - Contents will be available in English
- Communication:
  - Announcements will be made through Teams (and or elearning)
  - Direct communication through the Teams Channels. Participation is mandatory!
  - Email if required: jpbarraca@ua.pt, mbc@det.ua.pt, jla@ua.pt

Objectives

- Know the techniques to **identify the components of a system**
- Know the techniques to **observe the behavior** of systems and components
- Know the **methodologies for reverse engineering**
- Know the relevant protocols and technologies **to build systems, applications and devices**
- Understand the techniques, processes and tools for **decomposition of applications**

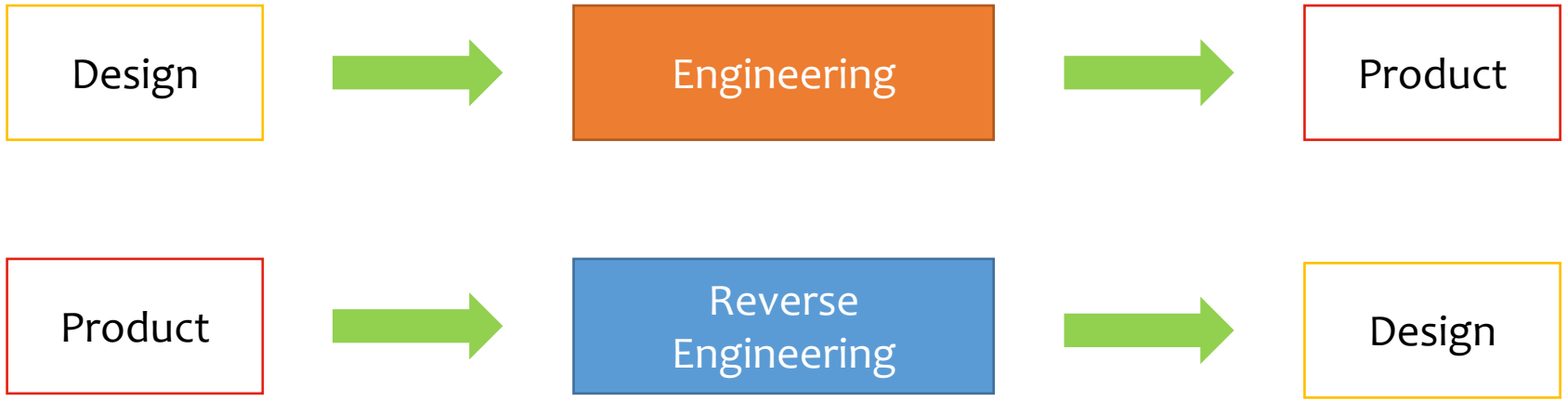
Objectives

- Understand the techniques, processes and tools for **decomposition of devices and systems**
- Understand the techniques, processes and tools for **decomposition of mobile applications**
- Capability to **perform tasks of reverse engineering**
- Capability of **documenting the process of reversing engineering**
- Capability to **replicate components** analyzed through reverse engineering

Objectives

- This will not be a course about hacking, malware analysis, or cracking

- This will be a course about reconstructing software/systems from products



Syllabus

Intro, plus 3 main modules

0. Introduction ~1 week

1. Mobile Applications ~3-4 weeks

2. Binary Applications ~5-6 weeks

3. Devices ~5-6 weeks

Evaluation

- 3 assignments, to be implemented by groups of 2 students:
  - Android – 20%
  - Applications – 25%
  - Devices – 25%
  - Assignments should be returned ~2 weeks after the last lecture on the topic

- 1 final exam – 30%
  - In June/July

- Some variations may be required

Bibliography

- Will be provided in every lecture:
  - Books, papers, reports, videos

- Available on the O'Reily library:
  - A. P. David, Ghidra Software Reverse Engineering for Beginners, Packt Publishing, 2021, ISBN: 9781800207974
  - Bruce Dang, Alexandre Gazet, Elias Bachaalany, Practical Reverse Engineering: x86, x64, ARM, Windows Kernel, Reversing Tools, and Obfuscation, 2014, ISBN: 9781118787311
  - Philip Polstra, Reverse Engineering and Exploit Development, Infinite Skills 2015 (Video)
  - Eldad Eilam, Reversing: Secrets of Reverse Engineering, Willey, 2005, 9780764574818
  - Dennis Andriesse, Practical Binary Analysis, ISBN-13: 9781593279127, 2018

- Relevant website (links): https://beginners.re/main.html