Université Nice Sophia Antipolis

POLYTECH NICE-SOPHIA

Soutenance de PFE

Présentatition: Smart Cards

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Plan

- Introduction
- Exercise 1
- Exercise 2

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Introduction

- Smart Cards Technologies have been widely applied to our nowadays activities
  - Credit/Debit Cards
  - Identification Cards
  - Public transport Cards
- Types of cards:
  - Contact
  - Contact less

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Contact less Technologies

- RFID
  - Passive
  - Semi-Passive
  - Active
- Infra Red
- Optical

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Activities

- The First Task was to configure the device used to read the card
- The Second Task to Emulate a NFC tag using a smartphone

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Exercice 1: Creation of an instation in a RFID card

- The objective was perform the read the content of two cards
  - Both cards have different messages
  - We needed to configure the Detector based on the norm ISO 7816
  - Specification: Type 4 Tag Operation Technical Specification

Exercice 1: Creation of an instation in a RFID card

- The objective was perform the read and write of two cards RFID provided by the professor
  - Both cards have different messages
  - Language: C#
  - We needed to configure the Detector based on the norm ISO 7816
  - Specification: Type 4 Tag Operation Technical Specification.

Exercice 1: Creation of an instation in a RFID card

- Retrieved problem:
  - The first code version recently was lost given to a problem with the operational system of the computer.

Exercice 2:NDEF tag Emulation(HCE) in a Smartphone

- Objective: Emulation of a NDEF tag in Smartphone Android
- Resources:
  - Android Studio
  - language java
  - The pieces of code the Professor
  - Smartphone Android provided by the Professor.

Exercice 2:NDEF tag Emulation(HCE) in a Smartphone

- Strategy:(Tag Type 4)
  - Select Application
  - Select CC File
  - Read CC File
  - Select NDEF File
  - Read/Write NDEF File

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Exercise 2:NFED tag Emulation(HCE) in a Smartphone

- Important Remarks:
  - All the steps Must be follow in the sequence.
  - Failure codes must be returned for each type of step.
  - All the steps are dependent from the success of the previous one.

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Exercice 2:NDEF tag Emulation(HCE) in a Smartphone

- Procedure:
  - The Idea was to consider the cases present in the norm, for each possible error return an specific Failure code
    - Unknown CLA = 0x6E00
    - Unknown INS = 0x6D00
    - Incorrect Lc = 0x6700
    - Incorrect Le = 0x6C00
    - Unknown AID/LID = 0x6A82
    - Non-compliant state = 0x6986
    - incorrect P1/P2 = 0x6A86 SELECT
    - incorrect P1/P2 = 0x6B00
    - Offset/Lc incorrect = 0x6A87
    - Offset/Lc incorrect = 0x6C00

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