

**Practical Exercises for
Mobile Business I
WS 2010/2011**

**Work sheet 3
Technology II**

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Exercise 1 (Smartcards)

- a) What are smartcards and what components do they consist of (=what do they contain)?
- b) Why are they used and what role do smartcards play with respect to
 - (i) security
 - (ii) applications?

Exercise 2 (Subscriber Identity Module/SIM)

- a) Name the most important function of the Subscriber Identity Module (SIM) in GSM and UMTS networks.
- b) What does the Subscriber Identity Module contain? Which of these contents are protected, which are not and why?
- c) Name other functionalities of the Subscriber Identity Module.
- d) What is SIM Application Toolkit?
 - (i) What does it do?
 - (ii) Name application examples for SIM Application Toolkit.

Exercise 3 (Universal SIM/USIM)

- a) What is a USIM?
- b) Name the innovations introduced with the USIM.
- c) What is a UICC and how do USIMs relate to a UICC?
- d) Describe market opportunities and effects of competing USIMs.

Exercise 4 (Mobile Devices)

- a) How can Mobile Terminals be categorized?
 - (i) Technical characteristics
 - (ii) Application Aspects
- b) Name four components of mobile terminals. Which two of these components do considerably determine the size of a mobile terminal?
- c) Describe the functional architecture of a mobile terminal.

Exercise 5 (Personal Area Network)

- a) Personal Area Networks (PAN) – what are they good for, what do they do?
- b) Please do briefly describe the related technologies IRDA and Bluetooth. Name the advantages and disadvantages of both IRDA and Bluetooth.

Exercise 6 (Mobile Operating Systems and Security Aspects)

- a) What are the advantages and disadvantages of mobile operating systems unavailable to other device manufacturers?
- b) Name two mobile operating systems unavailable to other device manufacturers and two manufacturer-independent mobile operating systems.
- c) When mobile operating systems allow the execution of 3rd-party software, what are the threats resulting from this for the user?
- d) What are the security precautions and countermeasures available in mobile operating systems?

Exercise 7 (Concepts of Mobile Operating Systems)

- a) What is the primary goal and what is the secondary goal of an OS?
- b) Name three functions of the operating system and state two examples (exemplifications) for each of these functions.
- c) What is a process? What does it do, what does it use and how is the mobile operating system involved?
- d) Which are the states of a process?
- e) What is a virtual machine?

Processed Lectures:

- **Lecture 8:** Smartcards and Related Application Infrastructures
- **Lecture 9:** Mobile Devices
- **Lecture 10:** Market Overview of Mobile Operating Systems and Security Aspects
- **Lecture 11:** Concepts of Mobile Operating Systems