

**Practical Exercises for  
Mobile Business I  
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**Work sheet 3 –  
Technology Basics II**

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**Exercise 1 (Smartcards, L08)**

- 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, L08)**

- 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.
- e) Describe the role and functionality of the UICC as a secure element.

### **Exercise 3 (Universal SIM/USIM, L08)**

- 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. Take example.

### **Exercise 4 (Mobile Devices, L09)**

- 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, L09)**

- 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, L11)**

- 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 3<sup>rd</sup>-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, L10)

- 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?

***Processed Lectures:***

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