G53MDP
Mobile Device Programming

Lecture 21 –Revision

Exam

- 1 hr
- Answer 2 of 3 questions
- Worth 30% of your module mark
- 15 marks per question
- “State…”
- “Describe…”
- “Giving an example…”

Topics

- Mobile Device Characteristics
- Device Architecture
- Android
  - Application Lifecycle
  - Activities
  - Layout and Widgets
  - Threads and Services
  - IPC
  - Data Storage and Content Providers
  - Broadcast Receivers
  - Security and Permissions
- Touch
- Battery / Power Management
- App optimization, deployment
- IOS / Cross-platform

Example Question 1 (2014)

- **This question concerns the application components used in an Android application.**

- You are implementing a simple social-networking application for Android, similar to Facebook.
- Describe how you would make use of all four of the major Android components in the software design of the application, detailing the tasks that you might expect the user to perform, the function of each component, and how the components are related and make use of one another.

[15 marks]

Example Question 2 (2014)

- **This question concerns mobile device usage and interactivity.**

- Many mobile devices include touch-based interfaces. Describe the differences between touch-based interaction and a traditional mouse-driven interface, and what effect this has on designing a touch-based mobile application.

  [6 marks]

- Using pseudo-code, specify a View that allows a user to two-finger-rotate, i.e. using a two-finger gesture to change the rotation of the View contents. You should include details of how the relevant motion events are made use of, to enable this functionality.

  [9 marks]

Example Question 3 (2015)

- **This question concerns Android system services.**

- State the Proxy design pattern as it is used to design inter-process method invocation between a client and a remote service.

  [2 marks]

- Inter-process communication is fundamental to the Android operating system and use of its API. Describe the communication between an Activity and a specific remote System Service, for example the Power Manager. You should include details of how the Service initially makes itself available via the ServiceManager, the Service lifecycle and how the *binder* facilitates communication at each stage. Describe a potential disadvantage of this architecture.

  [13 marks]

Example Question 4

- **This question concerns Android application development.**

- The Android SDK class AlarmManager is a system service, where the method set(RTC_WAKEUP, alarmTime, myIntent) will schedule an action to wake up the phone and send a *broadcast* of the specified Intent myIntent at the specified time alarmTime.

- Using both code fragments and written description explain how you would write an Android application that functions as a simple Alarm clock. The app should display the current time. The user should be able to press a button in the first Activity and move to another Activity where they can enter the time they want the alarm to be set for. You should outline the Activities that you would need to create and their functions, the Intents passed between them, the contents of the manifest file and any other components required.

  [15 marks]