

2024 / 25

School of Science and Computing

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Module Descriptor

Mobile App Development 2 (Computing and Mathematics)

Mobile App Development 2 (A13547)

Short Title: Mobile App Development 2
Department: Computing and Mathematics
Credits: 5

Level: Advanced

Description of Module / Aims

Evolve a multi-screen mobile application in a networked, message driven, context aware application. Incorporate in the application two-way access to remote REST (Representational State Transfer) and Messaging services. Integrate on-device context including camera, location, motion, climate and other sensors to deliver a rich user experience. Incorporate 3rd party components to deliver personalized mapping, media and general information services.

Programmes

stage/semester/status		
COMP-0978	BSc (Hons) in Applied Computing (International) (WD_KACCM_BI)	4 / 8 / E
COMP-0978	BSc (Hons) in Applied Computing (WD_KACCM_B)	4 / 8 / E
COMP-0978	BSc (Hons) in Applied Computing (WD_KCOMP_B)	4 / 8 / E
COMP-0978	BSc (Hons) in Computer Forensics and Security (WD_KCOFO_B)	4 / 8 / E
COMP-0978	BSc (Hons) in Computer Science (WD_KCMSC_B)	4 / 8 / E
COMP-0978	BSc (Hons) in Multimedia Applications Development (WD_KMULM_B)	4 / 2 / M
COMP-0978	BSc (Hons) in Software Engineering (WD_KDEVP_BI)	4 / 8 / M
COMP-0978	BSc (Hons) in Software Systems Development (WD_KDEVP_B)	4 / 8 / E
COMP-0978	BSc (Hons) in the Internet of Things (International) (WD_KINTT_BI)	4 / 7 / M
	BSc in Software Systems Development (WD_KCOMC_D)	3 / 6 / M

Indicative Content

- Advanced application architectural patterns
- The build, test & deploy lifecycle
- Accessing Platform Services: Persistence; Sensors / Subsystems (e.g. Location, camera, movement etc.)
- Accessing External Services: Access Patterns (e.g. REST); Third Party Applications & Components
- Build Processes: Dependency Management; Build Scripts (e.g. Gradle)
- Wireless Subsystem APIs (Application Programming Interfaces)
- App Store interaction, including key management

Learning Outcomes

On successful completion of this module, a student will be able to:

1. Select the appropriate design patterns and tools in the development of complex mobile apps.
2. Comment on the chosen mobile app framework and the underlying hardware components.
3. Design and develop complex multi-screen mobile apps from concept through to completion using best practices and guidelines.
4. Set up the interaction of an application with internal sensors and physical subsystems.
5. Integrate a remote service API within an application, perhaps based on REST principles, to deliver aspects of its core features set. For example: Maps/GIS (Geographic Information Systems), Media Sharing, Social Networking.

Learning and Teaching Methods

- Lectures will introduce the general context of the curriculum, and explore specific topics in depth. Supervised, guided and scripted practicals will lead the student through the construction of an application designed to illustrate key concepts covered in the lectures. The focus is on learning by doing in a studio environment. Each practical will propose a set of exercises – to be solved in a subsequent practical.
- Assignment One will focus on ensuring the student can construct a new application equivalent in style and structure to the guided practical.
- Assignment Two will invite the student to analyse, design and implement a new application.

Learning Modes

Learning Type	F/T Hours	P/T Hours
Lecture	24	
Practical	24	
Independent Learning	87	

Assessment Methods

	Weighting	Outcomes Assessed
Continuous Assessment	100%	
Assignment	50%	1,2,3
Assignment	50%	1,2,3,4,5

Assessment Criteria

- <40%: Unable to implement a relatively basic application. Cannot grasp fundamentals of the application lifecycle or operate an appropriate IDE (Integrated Development Environment).
- 40%–49%: Be able to implement a relatively mid-sized application, with 3 - 5 separate views/activities. Understand the basic of the application lifecycle and operate an IDE at a basic level.
- 50%–59%: Ability to model and implement an application of moderate complexity – including > 5 views + a simple persistence mechanism. Be able to use an IDE competently and debug applications.
- 60%–69%: Be able to implement a sophisticated application with multiple view / navigation mechanisms. The application will have local persistent storage and be able to interact with a remote service as a basic level.
- 70%–100%: All of the above to an excellent level. In addition the application should demonstrate a more sophisticated interaction with external services, and may leverage on device sensors and subsystems.

Essential Material(s)

- "Android Developer site." <http://developer.android.com>
- "Apache Cordova site." <https://cordova.apache.org>
- "iOS Developer site." <http://developer.apple.com/ios>

Supplementary Material(s)

- Camden, R. *Apache Cordova in Action*. New York: Manning, 2015.
- Neuburg, M. *iOS 9 Programming Fundamentals with Swift: Swift, Xcode, and Cocoa Basics*. New York: O'Reilly, 2015.
- Phillips et al, B. *Android Programming: The Big Nerd Ranch Guide*. New York: Pearson, 2015.

Requested Resources

- Computer Lab: BYOD Lab