

**National College of Ireland**

**Postgraduate Diploma in Mobile Technologies – Year 1 – Part-time – PGDMT 1**

**Semester One Examinations – 2014/15**

**Tuesday 6th January 2015  
6.30pm – 8.30pm**

---

**Mobile Architecture and Security**

Prof. John Murphy  
Mr. Mikhail Timofeev

Full marks will be awarded for complete answers to **FOUR** questions

**Duration of exam:** 2 hours

**Attachments:** N/A

1.
  - (i) Describe the *N-tier Architecture*, outlining the components of the *Presentation Layer* and the key issues that developers face when designing *Presentation Components*.  
[15 marks]
  - (ii) Give example(s) of commonly used *Mobile Patterns* in each of the following categories:
    - a. Patterns for Interaction
    - b. Patterns for Presentation
    - c. Behavioural Patterns  
[10 marks]
2.
  - (i) What is *Threat Modeling*? Give an example of a threat model and list some of the controls for each type of threat with respect to a hybrid mobile application.  
[10 marks]
  - (ii) What are the main principles of *Object-Oriented Design (OOD)* and the benefits of using *Design Patterns* in the development process?  
[5 marks]
  - (iii) Explain how the following *Mobile Security Risks* can be mitigated:
    - a. Weak Server Side Controls
    - b. Insecure Data Storage
    - c. Insufficient Transport Layer Protection (Network Traffic)  
[10 marks]
3.
  - (i) List the main factors influencing the choice of *Deployment Options* for mobile applications.  
[10 marks]
  - (ii) What is *WURFL* and how is it used in mobile application development?  
[5 marks]
  - (iii) Outline *Business-to-Consumer (B2C)* mobile strategy including the existing *Delivery Models*.  
[10 marks]
4.
  - (i) Discuss *Web Service technologies* (SOAP, REST, etc.) used on mobile devices and the differences between them.  
[10 marks]
  - (ii) Describe how *Cross-Site Scripting (XSS)* and *Cross-Site Request Forgery (CSRF)* attacks are carried out.  
[10 marks]
  - (iii) Define *Service-Oriented Architecture (SOA)* and list the benefits of using this software design.  
[5 marks]