**DUBLIN INSTITUTE OF TECHNOLOGY**

# BSc. (Honours) Degree in Computer Science

### Year 3

## WINTER EXAMINATIONS 2014/2015

### CLOUD COMPUTING [CMPU3007]

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THURSDAY 8TH JANUARY          1.00 P.M. – 3.00 P.M.

## 2 HOURS

ANSWER **THREE** QUESTIONS OUT OF **FOUR**.

ALL QUESTIONS CARRY EQUAL MARKS.

1 **(a)** The Deployment Descriptor allows the developer to control the deployment and operation of applications on the Google AppEngine. List and describe five features that can be managed using the Deployment Descriptor.

(10 marks)

**(b)** Describe in detail how you would use the Deployment Descriptor to control which authenticated users can access specific areas of an application. In your answer you should use suitable configuration examples and code samples to illustrate how this would work.

(10 marks)

**(c)** One element of the Deployment Descriptor has been described as working in a similar manner to pipelines in command shells. Explain in detail how this feature works using suitable configuration examples to support your answer.

(13 marks)

2. **(a)** List and discuss the factors that a corporation should consider when deciding on a move to Cloud Computing for enterprise systems?

(11 marks)

**(b)** The costs of providing and managing an IT infrastructure is often quoted as a motivator in choosing to use Cloud Computing. List and discuss **at least three** areas where cost considerations would have an influence on the decision to use or not use Cloud Computing in a corporate environment.

(11 marks)

**(c)** When deciding whether or not to use Cloud Computing services, consideration must be given to various legal issues. With specific reference to international considerations, discuss how such issues can influence a corporation in relation to Cloud Computing.

(11 marks)

3. You have been asked to design a system to run on the Google App Engine to serve as a database portal for a number of contributing colleges. Each college uploads their list of courses, in the same format, using an XML file upload. In the case of each of the following requirements, describe the steps you would take to achieve the desired result. In each case, you should support your answer by provision of working sample code.

   (a)  The system must provide an interface to allow the scripted uploading of XML files from the contributing college. Describe the mechanisms you would put in place to allow for the secure uploading of these XML files to the portal system.

                          (11 marks)

   (b)  Once an XML file has been uploaded from a contributing college, and has been imported into the portal database system, the system should email a nominated email address with statistics relating to the upload. Describe the Google mechanisms you would use to implement this.

                          (11 marks)

   (c)  Having been imported into the portal's database, the courses records should be searchable using a web interface. Describe the steps you would take to make these records available using a search on a dedicated web service.

                          (11 marks)

4. (a) Amazon Web Services provides a range of cloud services. List and describe the operation of five such services, giving examples of where you would use that service in building a corporate infrastructure or cloud application.

                          (11 marks)

   (b) An academic department wishes to use AWS to provide virtual LINUX machines for use by their computer science students. Describe the steps they should follow in order to provide such systems on-demand.

                          (11 marks)

   (c) Following the success of using AWS to provide virtual LINUX systems to students, the department wishes to write a piece of software to automatically provision such services for students when they register for their specific course. Describe the architecture of the application you would build to provide this service. In your answer you should highlight each service used and each significant piece of code necessary to implement this system.

                          (11 marks)