TECHNOLOGICAL UNIVERSITY DUBLIN

KEVIN STREET CAMPUS

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BSc. (Honours) Degree in Computer Science

BSc. (Honours) Degree in Computer Science (International)

Year 4

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SEMESTER 2 OPEN BOOK EXAMINATIONS 2019/20

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Enterprise Systems Infrastructure & Architecture

Mr. Ciaran Cawley

Duration 9hrs

Exam script available 9am on date of the exam.
All exams submissions should be uploaded before 6pm on the date of the exam

Answer ALL questions.

All questions carry equal marks.

1. *Finserv* is a fictional financial services company that specialises in recovery of tax paid by large organisations when those organisations pay their invoices or expense claims. Its clients (the large organisations) send both paper based and electronically transmitted data that *Finserv* then processes on their behalf. Using this example, answer the questions below:

    (a) List the five forces identified in Porter's competitive forces model.

    [5 Marks]

    (b) Using the forces listed in your answer to part **(a)** above, describe ***three*** competitive challenges that you think *Finserv* needs to address.

    [10 Marks]

    (c) Based on your answer to **(b)** above, outline ***three*** different business strategies that *Finserv* could employ to address those challenges and ***for each of the three*** strategies, explain how appropriate IT systems could support *Finserv* to achieve the strategic goals.

    [3 x 6 Marks]

2. **(a)** *Enterprise Resource Planning (ERP)* and *Supply Chain Management (SCM)* are a set of business processes and activities that take place within an Enterprise. ***Using a manufacturing company as an example***, outline ***three*** processes/activities that would typically be required as part of either ERP or SCM.

    [5 Marks]

   (b) For ***each of the three*** examples that you have described in answer **(a)** above, explain how an ERP or SCM **software system** could provide functionality that would support those processes/activities.

   [10 Marks]

   (c) For ***each of the three*** examples that you have described in answer **(a)** above, explain how ERP / SCM **software system** functionality could enable increases in *Efficiency* and *Effectiveness* for those processes/activities.

   [9 x 2 Marks]

3. (a) *Enterprise Application Integration (EAI)* is a central requirement in most large scale Enterprises. Outline what is meant by *Enterprise Application Integration* and why it is usually an important aspect of an organisation.

[5 marks]

(b) An *Enterprise Service Bus* provides the functionality to enable an Enterprise utilise a loosely coupled architecture. Briefly explain what is meant by *loosely coupled* and discuss, **using examples**, **two business benefits** that such an architecture provides to an organisation.

[10 marks]

(c) Within the context of a medium to large Enterprise that develops its own business software internally, **compare and contrast** *"Monolith"* and *"Microservices"* architectures using the headings below. In your answer, ensure you use specific examples and provide benefits/limitations where appropriate.

    (i) High level architecture.

[4 marks]

    (ii) Use of technologies.

[7 marks]

    (iii) Developer's cognitive load.

[7 marks]