



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS

**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR SCIENCE IN
SECURITY AND FORENSICS**

2NDYEAR 1ST SEMESTER 2018/2019 ACADEMIC YEAR

MAIN CAMPUS

COURSE CODE: IIT 3215

COURSE TITLE: SYSTEM ANALYSIS AND DESIGN

EXAM VENUE:

STREAM: Bsc IS,ICT, IIT

DATE: Dec 2018

EXAM SESSION:

TIME: 2.00 HOURS

INSTRUCTIONS:

- 1. Answer Question 1 (Compulsory) and ANY other two questions**
- 2. Candidates are advised not to write on the question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**

QUESTION ONE [30 MARKS]

Case study on Alstom replacing legacy systems with enterprise resource planning system.

Alstom provides systems for supporting energy and transport. This project was to support the UK gas turbine part of Alstom's business. The project involved the introduction of a new enterprise resource planning (ERP) system to replace 15 critical legacy systems and many peripheral applications and connect satellite offices across the globe into a single, integrated system. The project was instigated following an IT strategy review in 2001, where it was realised that a major project was needed to provide a single integrated system based on SAP R/3. In the words of Project Director Lee Cridland: 'we realised that our vision of creating a single, integrated system was simply not feasible with our legacy infrastructure.

The SAP solution is not only easier to run and manage, but has also improved our ability to collaborate with our employees and external partners on a global scale'.

The first phase of the project, completed in 2003, migrated the company's old logistics and finance systems to SAP R/3. The previous legacy systems were a twelve year old OMAC 2000 manufacturing system and Oracle Financials. The first phase involved connecting 750 users at its Lincoln head office, as well as providing access to a limited number of international sites. The next two phases, which will be implemented through 2003 and 2004, will replace the remaining legacy systems for pre-point of order and post-point despatch processes, including its customer

service module and extend the ERP system to a further 1000 users. Lastly, the system will be rolled out to about 20 global locations.

According to Cridland, the project is already financially justified on reduced IT support costs alone and Alstom expects to make a 200 per cent return on investment over the seven to ten year life of the system. Alstom employed NovaSoft, an IT services company or 'systems integrator' to

implement the project.

Using the above case answer (a) required:

- i) From the above case study identify feasibility study justification for this particular project (6 marks)
 - ii) State and explain two reasons why would in company run into trouble during stages of deployment of the new systems (4 marks)
 - iii) Explain the changeover strategy adopted in this software project and why (4 marks)
 - iv) State the reasons which might have caused failure of the systems (6 marks)
- b) Explain three components of a system? (6 marks)
- c) Discuss in depth Functional and non-functional requirements of systems (4 marks)

QUESTION TWO [20 MARKS]

- a) Explain the relevance of feasibility study in today's software development (5 marks)
- b) Explain Rapid Application Development (RAD) as methodology of software development (5 marks)
- c) What's the difference between logical and physical model (4 marks)
- d) Explain any **THREE** tools / techniques used for gathering of data during system development citing advantages: (6 marks)

QUESTION THREE [20 MARKS]

Case study on The UK National Health Service project to develop an Integrated Care Records Service (ICRS)

In the new millennium a new approach to providing information services for the UK National Health Service was proposed by the NHS Information Authority (www.nhsia.gov.uk). In the proposal document, it was explained as follows:

The major change proposed is to move away from the concept of a number of separate information systems based primarily around organizational structures to a situation in which professionals are provided access to the one integrated service.

The services will include access to records and the functionality needed to support clinical practice.

The stakeholders affected by this new information system are:

- 'Service users, where a modern IT-enabled NHS will directly and visibly impact on how they interact with the care system and on their experience as consumers of care services

- Health and care professionals involved with direct patient and service user care, who will have safe, fast, modern IT to support them routinely in their work

- Managers, researchers and other professionals not involved in direct patient care to have ready access to high quality, confidential, information.'

The patients are registered with Hospitals. The centre employs a number of general practitioners (i.e. doctors) and a few receptionists. Patients are officially registered with one doctor but can arrange appointments with any available one. These appointments may subsequently be cancelled. Some appointments result in one or more prescriptions. New patients are registered by a receptionist. When a patient is registered he/she provides his/her details such as name, date of birth, address, etc., and receives a unique patient number. To book an appointment a patient should contact a receptionist. The patient provides his/her number (or date of birth) and the receptionist provides a list of available time slots for appointments. The appointment is booked with the patient's doctor or if the patient's doctor is not available with any available doctor. The date and time of the booked appointment are given to the patient as a confirmation. Patients can cancel booked appointments by contacting a receptionist who will cancel appointments on behalf of patients. A patient who attends an appointment should check in first using a special terminal located in the waiting area of the Hospitals. The patient inputs his/her number (or date of birth). The system checks the details and confirms that the patient has been checked in. Doctors record appointment outcomes and details of prescriptions (if any) during the appointments i.e. all prescriptions issued by doctors are recorded on the patient's record. Patients who leave the area where the Hospitals is located are de-registered by receptionists.

- a) Produce a context diagram of the Medical Appointments System described above. (7 marks)
- b) Draw an Entity Relationship Diagram (ERD) for this system. (7 marks)
- c) Identify key stakeholders in this project and their respective roles (6 marks)

QUESTION 4 [20 MARKS]

- a) Explain DFD in respect to system development and illustrate using appropriate symbols (2 marks)
- b) System Investigation is a critical component System Analysis and Design. The choice of method used is likely to determine the quality of data to be gathered, Explain **THREE** different scenarios where interviews would be the most ideal method to use during data collection. (6 marks)
- c) System implementation is a very vital stage in SDLC, confirming the functionality of the system takes place at this stage. Briefly describe this stage and explain **FOUR** activities undertaken at this stage (4 marks)
- d) List any five economic advantages of adopting information systems by organizations (5 marks)
- e) Business drivers influence information systems. What are the Current business drivers that will continue to influence the development of information systems (3 marks)

QUESTION 5 [20 MARKS]

- a) With an aid of a diagram, explain the basic working principles of the Spiral model of software development listing two merits and demerit. (10 marks)
- b) As System analyst being interviewed in a panel, you have been asked to analyse system to ensure a turn around, Explain the skills set you are required to have to turn around systems in the company (6 marks)
- c) Differentiate between user documentation and system documentation (4 marks)