



**Unit:
Professional Issues in IT**

**Assignment title:
[TBay- a safety critical system]**

[Cycle] [Year]

Important notes

- Please refer to the *Assignment Presentation Requirements* for advice on how to set out your assignment. These can be found on the NCC Education website. Click on 'Policies & Advice' on the main menu and then click on 'Student Support'.
- You must read the NCC Education documents *What is Academic Misconduct? Guidance for Candidates* and *Avoiding Plagiarism and Collusion: Guidance for Candidates* and ensure that you acknowledge all the sources that you use in your work. These documents are available on the NCC Education website. Click on 'Policies & Advice' on the main menu and then click on 'Student Support'.
- You **must** complete the *Statement and Confirmation of Own Work*. The form is available on the NCC Education website. Click on 'Policies & Advice' on the main menu and then click on 'Student Support'.
- Please make a note of the recommended word count. You could lose marks if you write 10% more or less than this.
- You must submit a paper copy and digital copy (on disk or similarly acceptable medium). Media containing viruses, or media that cannot be run directly, will result in a fail grade being awarded for this assessment.
- All electronic media will be checked for plagiarism.

Scenario: A safety critical system

A system has been developed for the scheduling of maintenance at an airline company called TBay Airlines.

A trade union spokesperson for the airline maintenance workers argues that the to performing functions in in the new computer system there should be more **interactive human judgment** if safety is to be ensured. The program is one which schedules maintenance, and can reassign alternative aircraft when emergencies arise. The airline maintenance staff would be able to interact with the system, but only on a basic level.

The systems analyst, under whose direction the program was written, is aware that not all operational factors have been taken into consideration in the program, but he had been assured by management that the program conforms to all the requirements of the IATA (International Air Transport Association). In his opinion the program should have contained more interactive human judgement, so that a person is involved in the final decision making, but the company was not prepared to go to the additional expense of a fully interactive system.

When testing his program, he could not think of a scenario whereby the system couldn't meet a safety condition. When he was asked to testify in an inquiry dealing with the trade union's complaint, he did not volunteer his opinion on how the system should have been designed as he could not think of any negative outcomes that the system couldn't handle

Primary Participants:

Systems analyst

- designed program knowing that not all operational factors had been taken into account
- informed management of his concerns
- failed to volunteer his opinion when needed

Airline management

- disregarded analyst's concerns
- indicated 'decision rules' used in the program conform to IATA requirements
- opposed making system fully interactive

Implied Participants:

Programming staff

- implemented systems analyst's design

Task 1 – (15 Marks)

a) List possible **ethical** actions that these three main primary participants (Airline Management, Project Manager and the Systems Analyst) could have done before they chose the path of action described in the scenario. Explain each action you have identified clearly. You must describe at least 4 actions and they be applied to the scenario. (Total 8 Marks) Word count **300 words** for the answer.

b) Standards as an IT professional are Essential. Identify a professional body that any of the main IT participants (Project Manager or the Systems Analyst) could belong to. Give a full description of the professional standards that are required by that professional body and relate them to the actions of the participants in the scenario. (Total 7 marks) Word Count 300 words.

Task 2 – Project Management Lifecycle and Strategy - (16 Marks)

A **software development process** is the process of dividing software development work into distinct phases to improve design, product management and project management. It is also known as a **software development life cycle**.

a) Methodologies include agile and the waterfall methodology. Choose one of these methodologies and describe it. Draw a diagram that represents all the phases in the methodology and explain the significance each phase as applied to the scenario. Specifically mention any of the participants from the scenario at each stage. Word count 500 words. (6 Marks)

b) Assess Five (5) advantages and Five (5) disadvantages of the methodology you have chosen in part (a) if it was to be used to develop the software in the scenario. Word count for the advantages/ disadvantages is 500 words. (10 Marks)

Task 3– RISK - (20 Marks)

All projects involve risk and it must be acknowledged.

- a) Discuss FIVE (5) methods of identifying risks when developing software. Word count 100 words. (5 marks)

- b) What would you consider to be the 3 **main** risks in the Tbay Airline scenario? Please give a detailed explanation as to why you have identified these risks. Word count 500 words. (3 marks)

- c) Risk Management should be applied to all projects. Draw a diagram that shows a simple approach to the Risk Management Process. (5 Marks)

- d) Draw a Risk Assessment Map for those risks you have identified in the scenario in part b) of this question. (4 Marks).

- e) What International Standards are there for Risk Management? Choose one of these International Standards and explain their Aims and Objectives. (3 Marks) Word Count 150 words.

Task 4 – Software Deployment - (15 Marks)

Software Deployment is:

“..the process of putting software and software solutions into use or action and ultimately driving business success.”

(IBM 2004:1)

- a) There are many different ways of releasing software into use. Explain the different ways this can happen. (4 marks) Discuss each of these different ways to release the software in the above scenario within the airline company. Word count 300 words. (8 marks)

- b) Taking into account your answer to parts a) above, discuss which would be the most feasible considering the TBay Airlines scenario. 200 words. (3 marks)

Task 5 - Service Management within the IT sector– (18 Marks)

There are two ways to approach IT Service Management. They are *in-house* and *outsourced* when looking at IT Service management (ITSM).

- a) Assess THREE (3) advantages and THREE (3) disadvantages of using outsourcing for the development of the new computerised system at TBay Airlines. Word count 300 words. (6 marks)

- b) If TBay Airlines had chosen to use in-house development. Discuss why this is seen as the best way to develop this new Airline Maintenance system. (12 marks) Word count 600 words.

Task 6 – Software Quality – (16 marks)

- a) There are two ways to measure software quality. Identify them and explain in more detail what they mean. (4 Marks) Which of these would be beneficial to measure the quality of the newly created TBay Airline system? (6 Marks) Where necessary please include references. Word count 400 words.

- b) There are many international software standards being introduced. ISO is once again the primary forerunner in software quality legislation. One of these is ISO 9126. It's Quality Model has software quality characteristics. Explain what these are and apply them to the scenario. (6 Marks) Word count 200 words.

Submission requirements

- The word count for the word-processed report is **4000 words**.
- All references and citations must use the Harvard Style.
- You must submit a paper copy and digital copy (USB flash drive or similarly acceptable medium).

Candidate checklist

Please use the following checklist to ensure that your work is ready for submission.

Have you read the NCC Education documents *What is Academic Misconduct? Guidance for Candidates* and *Avoiding Plagiarism and Collusion: Guidance for Candidates* and ensured that you have acknowledged all the sources that you have used in your work?

Have you completed the *Statement and Confirmation of Own Work* form and attached it to your assignment? **You must do this.**

Have you ensured that your work has not gone over or under the recommended word count by more than 10%?

Have you ensured that your work does not contain viruses and can be run directly?