Unit:

Professional Issues in IT
Assignment title:

[TBay- a safety critical system]

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Task 1
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.

About ethical action: **responsibility, honesty, respect and fairness**. These four core values are at the heart of the System Analysts, Airline Management, profession and must be overseen by three parties.
Respect and fairness
Fairness means non-discrimination and no external use of transparency or clear and open communication, which helps prevent conflicts between leaders and their team members, and association between members. It allows everyone to put the best interests of the organization and its stakeholders first. significantly reduce risk, achieving a higher expected success rate.
Mutual respect is making sure all your employees treat each other with respect as well. They should show due respect for each other's ideas and views. A team that doesn't get along is less effective. Bring fairness and transparency in all matters to employees. Build trust with employees. The staff will always turn to you and respect your opinion at all times. Building corporate reputation when the working environment is always analyzed and fair.

Honest it includes authenticity in both oral and written communication. You must avoid blaming team members or co-managers. You must make decisions based on reliable and accurate information.

The responsibility is the obligation to protect the personal information of every member and not to disclose that information to outsiders without the individual's permission. Comply with laws and regulations. Act consistent with policies/procedures. Make decisions and conduct yourself with decisive actions, honest in product evaluation, not self-interested Be conscious of the product you make, offer solutions to problems. Help colleagues, train and coach employees, collaborate with users and stakeholders. Work closely with senior management, partners, customers and technicians. Set a good example, hold everyone to the same standards, and set clear expectations. A good ethical organization can create a

stronger relationships between employees and leaders, and even help the organization grow as new employees integrate into the system. The right thing must be done for the benefit of our employees, shareholders, customers, vendors, suppliers, and the communities in which we do business around the world. We share a responsibility to protect and enhance the Company's reputation, and all of our strategies and business practices must be consistent with the ethics.

Examples of respect and fairness
Two employees who practice different religions get into an argument over their beliefs. Their manager's religious beliefs align closely with one of the employees', but the manager is careful not to express any bias. They inform each employee of the importance of respecting others' beliefs and help them develop their communication skills so that they can continue working on the same team.
Examples of industry bodies' codes of ethics:
• Examples of industry bodies codes of ethics:
- IEEE Computer Society: http://tinyurl.com/65tle7n

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.

As an IT professional, it is important to have an
understanding of IPR.
World Intellectual Property Organisation (WIPO)
Intellectual Property Rights (IPR)
• Technical
- Licensing fees
- Product codes
- Encryption
• Legal
- IPR specific laws
- Protection of own & companies from overseas
• IPR is controversial
- Exclusion
Copyright – Ownership

• Organisations write ownership into contracts
• As an employee, the organisation will usually ‘own’
your ideas & deliverables
- Even ideas developed outside of working hours can be claimed by an organisation
- As IT professional, you should always remain aware of
this fact. If there is an issue you must negotiate before
signing a contract
- On leaving an organisations employment, ownership
remains with the company.
Copyright – Ownership
• Software specific copyright
Fair use is the term for a rule allowing a certain
amount of the original work to be reproduced without
getting further permission from the owner.

Task 2
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)

Requirements Gathering and Analysis

During this phase, all the relevant information is collected from the customer to develop a product as per their expectation.

Business analyst and Project Manager set up a meeting with the customer to gather all the information like what the customer wants to build, who will be the end-user, what is the purpose of the product. Do we have to support multiple languages?

How many users are expected to use the application? etc. Building a product a core understanding or knowledge of the product is very important.

System Design

In this phase, the requirement gathered in the SRS document is used as an input and software architecture that is used for implementing system development is derived.

The architects and members of the team work on software architecture, designing for the project. The airline has backup and failover capabilities so the system is always accessible. Architects create Architecture diagrams and design documents.

Coding

The coding starts once the developer gets the Design document. The Software design is translated into source code. All the components of the software are implemented in this phase.
The development team works on coding the project. Since the application is an aviation application and security is a top priority in the application requirements, they perform some security checks, test logging features in the application.

Testing

The testing starts once the coding is complete and the modules are released for testing. In this phase, the developed software is tested thoroughly and any defects found are assigned to developers to get them fixed.

These defects are fixed by the developers and the testing team tests the fixes to ensure that the defect is fixed. Retesting, regression testing is done until the point at which the software is as per the customer’s expectation. Testers refer SRS document to make sure that the software is as per the customer’s standard.

Deployment

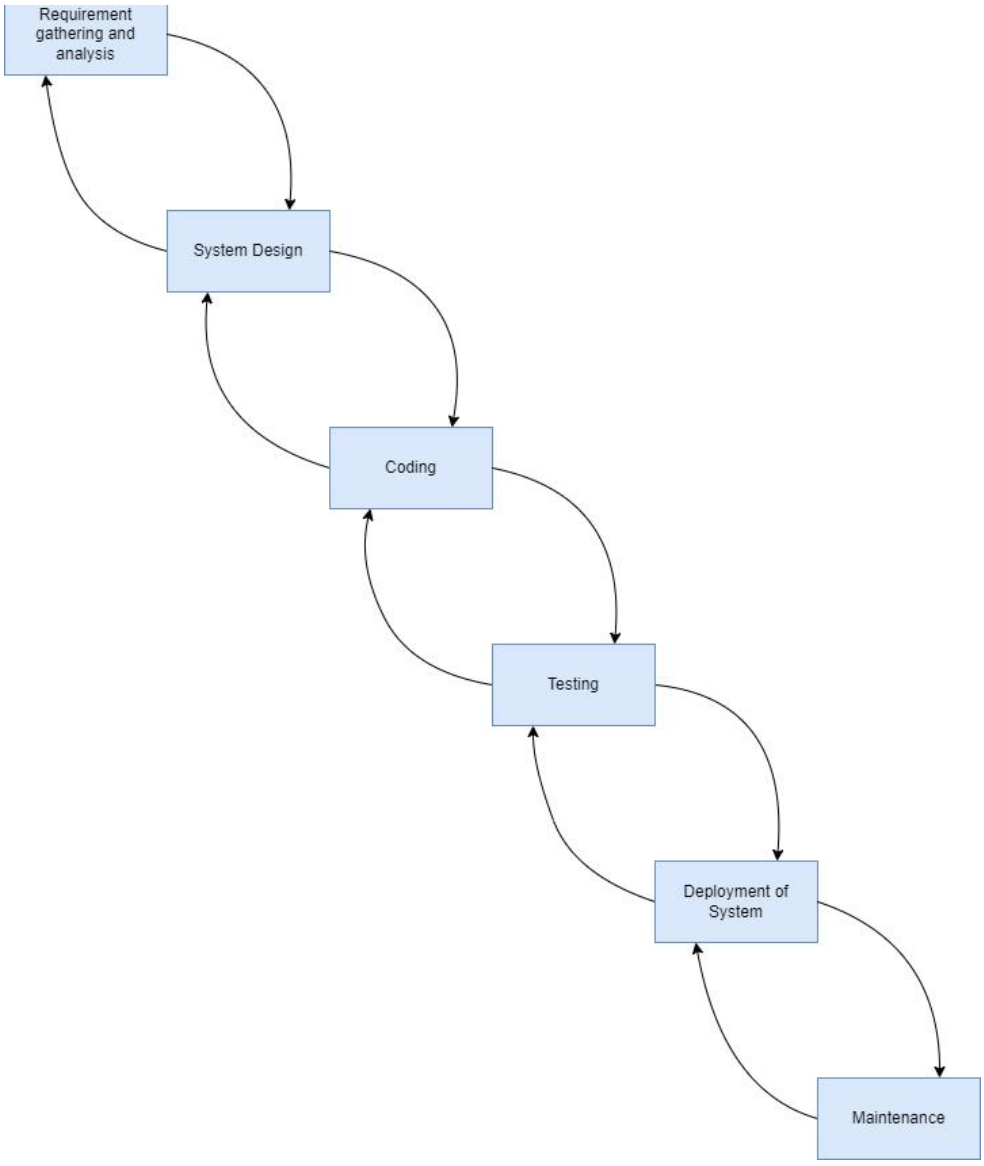
The team builds and installs the app on the servers that were purchased for the airline app. Some activities install security patches, increase the server's hardness. They also coordinate with IT and network

administration teams to finally get the application up and running on production servers.

Maintenance

During the maintenance phase, the team ensures that the application is running smoothly on the servers without any downtime.

Issues that are reported after going live are fixed by the team and tested by the testing team.



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)

Assess Five (5) advantages

Simple, easy to understand and easy to use

High precision

Flexibility

Clarity

Suitable for milestone-oriented projects

Assess Five (5) disadvantages

Project scope changes are not allowed

Do not allow to change the requirements of the project

No working product until the project is almost complete

It is not easy to handle unexpected risks

Too rigid

Task 3
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)

Report project status and include risk management issues

Revise the risk plan according to any major changes in the project schedule

Review and minimize risks, eliminate the risks with the lowest probability

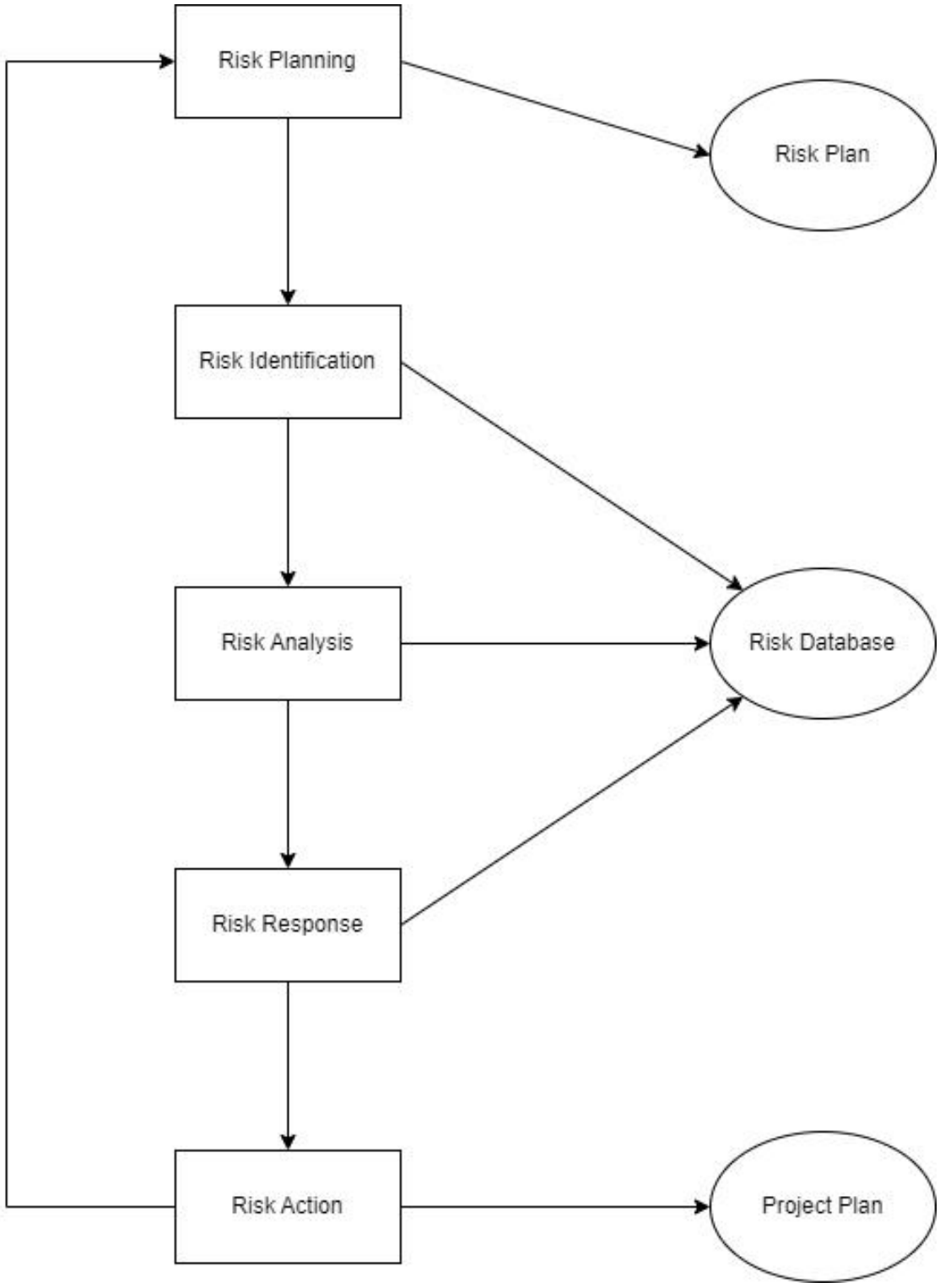
Think about new potential risks after changing project schedule or scope

When a risk occurs, the corresponding mitigation response should be derived from the risk management plan.

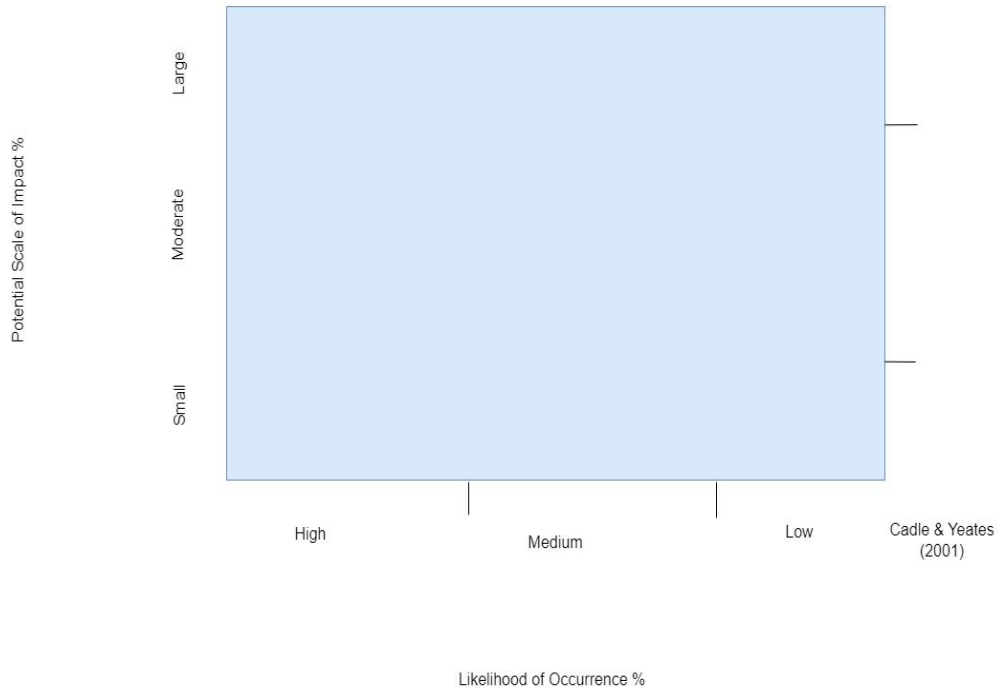
B) What would you consider to be the 3 main risks in the Tbay Airline scenario? Please give a detailed explanation as to why you have identified these risks. Word count 500 words. (3 marks)

Know Users:
-If the Airline Maintenance team are not familiar with using a computerised system then they would have to trained thoroughly in it's use.
Technical Requirements:
-If there has been an underestimation in the size of the finished system, the specification of the computers might not allow the new system to function efficiently. The system might actually need an upgraded operating system to run.
Project team skills:
-Lack of expertise. If the team working with the system analyst are not skilled enough to produce the finished system then they will need training. This shouldhave been identified by the system analyst when looking at the system requirements at the beginning of the project lifecycle. If left until the team are working on developing the software, there is a risk that the completion date will be pushed back.

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.

• Four basic strategies
- Prevention
- Reduction
- Acceptance
- Transference

Reduction

• Risk reduction can be achieved through pro-active planning
- Risks that through analysis are recognised as being able to be reduced, either in impact or chance of occurrence
• Examples of risk reduction:
- Scheduling in advance availability of specialised programmers for specific code development
- Using ‘off the shelf’ proven software where possible

rather than creating bespoke for the sake of it

Task 4
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)

Big Bang:
-Is a risk unless there has been extensive testing before the system goes live.We are led to believe that the airline company is worried about the cost of the system, so would theyhave authorised extensive testing beforehand because of the cost?
-No existing companywide computerised system is in place,so Pilot is not feasible. The new system is to be installed in one area only.

Parallel:
-The only way to do this would be to run the new system in parallel with the
existing paper-based manual system. This would not be a true comparison as the two systems are very different.Web based installation would depend on the IT infra structure within the airline company.Is it too costly to do this?

Pilot Installation
• Isolated installation (one or two departments)
• Minimum impact
• Error/issue identification before wider installation
• Successful organisation-wide rollout then follows

Web-based Installation
• More common in software industry
• No installation

• Uniformity
• Light on resources

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)

-Students will have discussedeach of these different ways of releasing the new software, but now need toidentify which are not feasible and which might bemost suitable for the airlines system.
-But the students can choose any if they support it with a valid argument.
-I expect they will choose Web based.

Task 5

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)

3 advantages of using outsourcing

- Convenient, suitable for non-specialists: By using outsourcing services, you can save time and focus on your main business goals instead of focusing on software development. soft. Prioritize key business goals. When your software development project is in the hands of professionals, you will have more time to focus on other aspects of your business. You can try to work on the long-term goals of your business and start working on ways to achieve them. The benefits include strengthening and improving the core processes that help your company improve which is a guaranteed step to continued success.
- Cost and effort savings: compared to in-house outsourcing Cost per hire: The amount you invest in hiring an internal resource for your software development project . This cost varies depending on developer experience, technology complexity, regional availability, and several other factors. You may even need to look for agile practitioners as it is common practice to follow an agile software development approach. Developer Salary: The next cost associated with building software in-house is the developer or software engineer's salary that you have to pay each month. IT Costs: When it comes to hiring in-house developers,

there is an additional cost that comes with it. You need to take care of building the complete IT infrastructure for software development to happen. Software licenses: The next cost that comes with building software in-house is the cost of acquiring all software licenses. There may be some licenses required for software development and the company will bear all of them. IT systems: When you build software in-house, you need to provide not only the software development team, but also the IT systems, including hardware, technology, and more. All of this adds up to in-house development costs that are not required for outsourcing.

- Meet technical requirements: outsourcing with a strong and experienced coder team, technically, will not be worried, and will always be updated with the latest technologies. Because today's technology is always innovating rapidly, and it is imperative for businesses to always update as quickly as possible so as not to be eliminated, compared to non-specialist in-house outsourcing will be a huge port and cannot be updated quickly. If yes, the outsourcing will be updated as soon as possible.

3 disadvantages when using outsourcing

- Opinions are heterogeneous, not in accordance with the original idea: Because when the business requires it, there will be many directions to give, leading to when the person receiving the software understands a different idea of the enterprise, leading to the product. The product is not as expected of the business at first.
- Difficult to operate and manage: because when assigned to the enterprise, the software outsourcing service will have practical classes and training instructions for the employees of the enterprise, but some employees do not perform. training required by the outsourcing service, resulting in the failure to properly perform the functions in the software. And that is also the reason why it is difficult to operate and administer the system, leading to the failure of projects that are not as desired by enterprises and software service providers.
- Difficulty in warranty and repair when there is an immediate problem: having a problem will be difficult because you have to notify the outsourcing service and then have to wait for the system side to handle and need It takes time for the service side to process and repair, so it will take time at this time and if the business side is in need of this software, it will be detrimental to the business and cause damage to the business. The warranty is also a concern if you buy the software right at an unreputable place, the software will not be guaranteed warranty. And it will cause difficulties in the use of the business and higher, both money and reputation.

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.

If TBAY chooses to develop internally, it will be safe for data, data, confidential information of internal company as well as customers, limiting unauthorized intrusions to steal data of hackers, helping operating system is safe, high security. In-house software development also allows the team to be more dynamic through streamlined communication efforts. There is no need to get up to speed on common internal languages, systems, and processes as is the case with outsourcing. Internal teams can fully understand the development requirements around business specifications.

- Better control over the development process and product quality: when doing it internally, the management of the enterprise will be easier and can be checked anytime the business wants. And will bring up unwanted problems that will be fixed from the beginning, without having to wait until the software is complete to detect it like outsourcing.
- Increased information security because no third party is involved in the project: In today's world, the misuse of personal data has seriously affected many individuals and companies. The security risk is very high for your business when outsourcing projects that require the use of personal information. There is a chance that information is misused and passed on to unauthorized people, who can wreak havoc on your customers and your business. So when outsourcing it internally, it will ensure the important data that businesses want to keep confidential.
- Reduce project costs because there is no need to pay a third party: Outsourcing can be cheaper. However, you may encounter an offshore company with hidden costs. And when buying software, there will be times when you have to rely on a third party and incur fees for the third party. And the third party is also where the price of a software is high or low.

Task 6

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.

Quantitative
Numeric, a ‘yes/no’ measure
Faults per lines of code
Program load time
Program
execution time
Judgement based
Subjective
The interpretation of quantitative data
-A mixture of both of themcould be used to measure the quality of the new TBay Airline system. Quantitative measurement is based on the actual program itself. Program load time and execution is easy to measure, as are faults per line of code. There will be standards set down in a policy that the systems analyst and the programming team would be expected to work to.Qualitative is harder to measure as it is someone’s judgement.
-Once again the standards set down, and the outcomes of the quantitative analysis would be used to decide on the quality of the software. The systems analyst and the programming team would be expected to work to.

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.

ISO 9126
Structured software quality characteristics:
-Functionality
-Reliability
-Usability
-Efficiency
-Maintainability
-Portability
Each of these need to be applied to the scenario.