الجامعة السعودية الالكترونية
Saudi Electronic University
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College of Computing and Informatics

System Analysis and Design

IT243

Assignment 1

Deadline: Day 12/02/2019 @ 23:59

[Total Marks for this Assignment are 5]

Student Details:

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Instructions:

- This Assignment must be submitted on Blackboard (**WORD format only**) via the allocated folder.
- Email submission will not be accepted.
- You are advised to make your work clear and well-presented, marks may be reduced for poor presentation. This includes filling your information on the cover page.
- You MUST show all your work, and text must not be converted into an image, unless specified otherwise by the question.
- Late submission will result in ZERO marks being awarded.
- The work should be your own, copying from students or other resources will result in ZERO marks.
- Use **Times New Roman** font for all your answers.

Learning Outcome(s):

LO1: An understanding of the role of analysis and design in software engineering.

Question One

[1 Mark]

Suppose a system is developed in Year 0 (the current year) costing $100,000. Once the system is operational, benefits and ongoing costs are projected over a period of three years according to the table shown below:

	Year 0	**Year 1**	**Year 2**	**Year 3**	**Total**
Total Benefits		45,000	50,000	57,000	?
Total Costs	100,000	10,000	12,000	16,000	?

a. Calculate the total benefits over the duration of three years.

Total Benefits = 45,000 + 50,000 + 57,000

Total Benefits = 152,000

b. Calculate the total costs over the duration of three years.

Total Costs = 100,000 + 10,000 + 12,000 + 16000

Total Costs = 138,000

c. Calculate the return on investment.

ROI = (152000 – 138000) / 138000

ROI = 10.14 %

Learning Outcome(s):

LO1: An understanding of the role of analysis and design in software engineering.

Question Two

[2 Marks]

Below are some of the factors which can result in the failure of software development projects. Briefly discuss each of the factor and suggest ways to overcome these. Moreover, which of the two factors do you think are more critical and why? Justify your reason.

a. Over time or budget

In many instances, improvement of a assignment may be prolonged past its agenda or its price range. This may want to cause undertaking failure if the time-frame or price range is constrained.

The foremost answer is taking extra time in estimating all elements affecting the challenge improvement to attain proper estimation for each time and price range. Then observe each step within the undertaking to fulfill the time time limits and restrained price range.

b. Feature creep

When seeking to upload extra functions that had been no longer discovered inside the unique evaluation and layout, the modifications can drastically growth time and fee and might reason the complete gadget to fail

Solution: Ensure that each one adjustments are critical and that the customers are privy to the effect on price and time. Try to transport proposed modifications into destiny variations.

c. Inaccurate estimation of the labor involved

Wrong estimation for the attempt of every project in constructing the machine, will end result of incorrect estimation of running groups. This can result in boom time and fee and purpose gadget failure.

Solution: Ensure assembling all duties into smaller workable portions, so it will likely be tons simpler to make proper estimation for every mission and therefore proper estimation for the complete gadget.

d. Lack of financial support

Due to incorrect monetary estimation, the machine ought to come to be with failure. The economic assets should completed earlier than the gadget is constructed.
Solution: Ensuring proper reasonable estimations is step one to keep away from loss of monetary help. Then locating monetary assist options will defend the funding.

e. Lack of technical knowledge and expertise

The improvement system can fail if the group lack technical know-how or knowledge. Because because of this machine will now not be constructed with the capabilities wanted or it can't be construct the precise time table.
Solution: Prepare the group with proper guides and proper skilled individuals who can lead the group. Select the maximum suitable technology perfect the crew

f. Inadequate knowledge of the target market

Building the device isn't always the aim itself, however promoting the device or getting the monetary advantages of it. So insufficient understanding of the goal marketplace will result in much less monetary advantages.
Solution: making appropriate marketplace evaluation earlier than constructing the device to make certain that the machine may be economically useful.
* The vital elements are:

All cited elements are crucial; but, a number of them can not be constant effortlessly. The elements which isn't associated at once to the growing method is the maximum crucial elements. As those elements are out of manipulate.

For the motives above: “loss of monetary help” and “Inadequate understanding of the goal marketplace” are the maximum crucial elements due to the fact there aren't any problem inside the constructed machine to restore and it's miles difficult for instance to locate monetary help within the center of constructing a gadget.

Learning Outcome(s):

LO1: An understanding of the role of analysis and design in software engineering.

Question Three

2 Marks

Suppose you as project manager are using the Waterfall development methodology on a large and complex project. Your manager has just read the latest article in *Computerworld* that advocates replacing the Waterfall methodology with Prototyping and comes to your office requesting you to switch. What will be your opinion about it?

Under what circumstances would you opt for the Prototyping model and what would be the limitations of opting it? Discuss the difference between the two methodologies, and what are the advantages and disadvantages (or limitation) of each?

opinion about it

First, we need to be clear approximately the threat of converting within the center of improvement section. Therefore, if we're inside the early stages of evaluation or layout levels we are able to recollect converting to Prototyping. However, if we're inside the center of improvement segment, generally, any advantages are outweighed with the aid of the want to study the brand new device and alternate the paintings already performed into some other paperwork. So, with the intention to attain dependable selection we want to examine among the 2 methodologies

	Prototyping	Waterfall
Description	Analysis, layout, and implementation levels are executed simultaneously, and time and again in a cycle till the system is finished. With those methodologies, the fundamentals of evaluation and layout are executed, and paintings without delay starts offevolved on a device prototype, quick-and-dirty program that provides a minimal amount of features. This is proven to the customers and the mission sponsor, who offer remarks. These feedback are used to reanalyze, redecorate, and re-put into effect a 2nd prototype, which offers some extra functions. This technique maintains in a cycle till the analysts, customers, and sponsor agree that the prototype affords sufficient capability to be established and used inside the company.	With waterfall improvement–based totally methodologies, the analysts and customers continue in series from one segment to the subsequent. The key deliverables for every section are offered to the mission sponsor for approval because the mission movements from segment to segment. Once the sponsor approves the paintings that changed into carried out for a section, the segment ends and the following one starts offevolved. Although it's far feasible to move backward inside the SDLC, it's far extraordinarily tough.
Requirements	It is excellent choice when requirements are not so clear. Because feedback cycles let users identify changes and refine real requirements. It is wonderful preference whilst necessities aren't so clean. Because remarks cycles allow customers perceive adjustments and refine actual necessities.	To undertake Waterfall version, necessities ought to be so clear and be diagnosed thoroughly from the very starting. Because necessities are “frozen” as undertaking proceeds – no transferring goals allowed. So if the necessities aren't too clear or they're modified in the course of the task, then Waterfall can be terrible preference.

Project Time schedule	As Prototyping offers a gadget right away then a method of refining the machine takes on, so it's miles great desire with brief time initiatives. After a brief time there may be “seen” proof of the brand new device and crew paintings and trade time agenda because of person’s comments. So dealing with agenda visibility is ideal while adopting Prototyping version.	Takes a long term from begin to complete, and should wait a long term earlier than there may be “seen” proof of the brand new gadget. So adopting this version might be terrible for agenda visibility and for quick time tasks.
System complexity	Prototyping right away affords a device with which the customers can have interaction, with minimum capabilities. This isn't true manger because it minimizes adjustments to the necessities because the venture proceeds. Prototyping very quickly provides a system with which the users can interact, with minimal functions.	may be used each for normal and complicated device, and it may take care of gadget complexity in true manger because it minimizes adjustments to the necessities because the mission proceeds. Also due to the fact going backward isn't clear in Waterfall version, each requirement within the device ought to be analyzed from all components inside the device and the way this.

* Waterfall is higher preference if the gadget is complicated and dependable (because the case defined within the query)

* Prototyping is higher preference if the device is with brief time agenda or with uncertain consumer necessities (no longer noted inside the query).Adding to this, the hazard of converting the technique after beginning, so, I will select to finish the undertaking the use of the identical technique “Waterfall” over “Prototyping”