

CITS5501 Week 9 exercise

Version: 0.1.0

2021-04-30

For each of the following requirements for a software system:

- explain whether they meet the criteria for good requirements;
 - if they do not, explain what is wrong with them, and suggest an improved requirement.
- a. The system must have excellent usability.
 - b. From the “Account Billing” screen, the customer can see the estimated costs for the current billing period, as well as the total of the previous bill. He can also select “Payment Methods” from a menu, which allows him to go to the “Change Payment Methods” screen.

See the next page for completion and submission details.

Sample solution - question (a).

This suffers from two problems:

1. “Usability” could mean multiple things (or all of them at once). It could refer to how easy the system is easy to learn; it could refer to how quickly experienced users can perform a task; it could refer to how error-prone users tend to be when performing a task. (These are the most common meanings of “usability” and are in line with the definition provided by Pressman, 8th ed, chap 15, of usability: “a qualitative measure of the ease and efficiency with which a human can employ the functions and features offered by the high-technology product”. But it is also possible the writer had something very different in mind.)
2. Even if we can pinpoint exactly what “usability” means, “excellent usability” is a *vague predicate* – there is no clear demarcating line between things that satisfy it and things which do not.

A better requirement might be something like:

“After completing the exercises in the system tutorial, users should be able to perform the following operations with less than a 10% error rate: [a list of operations follows], and be able to complete 20 operations per hour.”

This pins down what aspects of usability are meant (all three of ease of learning, speed of operation, and error rate), and provides an objective criterion as to when it is satisfied.

Marker's comments:

Don't confuse *vagueness* with *ambiguity*.

- A *vague predicate* is one in which it's impossible to precisely demarcate when some object satisfies the predicate, and when it doesn't. (The classic example of a vague predicate is "is tall"; there is no sharp dividing line between people who are tall, and people who are not, although there are certainly people who everyone agrees fall one side of the border or the other.)
- *Ambiguity* means that a term or sentence can be validly interpreted in more than one way. For instance, the word "bank" can mean a financial institution, or the side of a river (this is called "lexical ambiguity"). The sentence "She saw the man with binoculars" could mean that the subject of the sentence used binoculars to see a man, or could mean that the subject of the sentence saw a man who was holding a pair of binoculars. (This is called "structural ambiguity"; there are multiple possible ways of parsing the sentence.)

In answering this question, you cannot simply say "This requirement is obviously vague, incomplete, ambiguous and inconsistent"; no matter how obvious you think the problems are, you must present a *justification* for your conclusion.

Some criteria which are not highly relevant here:

- Completeness. If we're looking at only one requirement, it'll be difficult to judge whether requirements are *complete*. We can only usually judge whether a *set* of requirements are complete.
- Consistency. Occasionally, we might read a requirement that's not even internally consistent; but usually, inconsistencies arise between different requirements.

If you're relying on a textbook for your understanding of what constitutes a good or bad requirement, it's probably worth citing the textbook. (For instance, Pressman, 8th edn, has criteria for good requirements in section 8.8, "Validating requirements".) Be very cautious about citing a Web page as an authority. Occasionally, a Web page or Blog post may be highly authoritative; but usually, a reference to a textbook is better.

Sample solution - question (b).

Compared to the previous requirement, the one in question (b) is much better.

Everything it mentions is objectively testable, and doesn't seem to be vague or ambiguous.

There are still some aspects of it which could be improved, however:

- It seems to verge on being part of *design*, rather than a requirement (although we'd need more information to know for certain) - it refers to a "screen" which the customer can see, rather than simply what facilities the system should provide to the customer.
- The requirement seems to describe potentially independent services – the facility for the customer to view costs, and the ability to change payment methods. It might be better to split the requirement into two (or even three).
- The customer is referred to throughout as "he", which seems unnecessary. It wouldn't make the requirement too much longer to just repeat "the customer".

An improved "requirement" might be something like:

1. The system shall provide customers with the ability to view the total of the previous bill. [Or possibly even "bills" – why is it restricted to just one?]
2. The system shall provided customers with the ability to view estimated costs for the current billing period. [Estimated how, exactly? Perhaps this is defined elsewhere.]
3. The system shall allow a customer to change the payment method to be used for future bills. [Here, we make what seems like a reasonable assumption, that it doesn't make any sense to change the payment method for *past* bills.]

Another possibility might be to present these as a *user story* (though technically, a user story is not the same as a requirement).

This would have the advantage of:

- Connecting the requirement to a business need
- Avoiding the use of "he" (user stories are written in the first person)

Marker's comments:

- As with the previous question, *completeness* and *consistency* are not very relevant here.

Completing the exercise

- The assignment contributes **5%** towards your final mark this semester, and is to be completed as individual work. It is marked out of 10.
- The deadline for this assignment is **23:59 pm, Tuesday 4th May**.
- The assignment is to be done individually.
- You are expected to have read and understood the University [Guidelines on Academic Conduct](#). In accordance with this policy, you may discuss with other students the general principles required to understand this assignment, but the work you submit must be the result of your own effort.
- You must submit your assignment before the submission deadline above. There are [Penalties for Late Submission](#) (click the link for details).

Submitting the exercise

- Your answers should be submitted as a **PDF document** (Word, RTF, Apple Pages and other formats are not acceptable), with A4-sized pages.
- Your answers should be in a readable font, of at least 11-point size.
- Your answers should be no longer than one (1) page.
- Your answers should contain a numbered heading for each question.
- Your answers should be submitted via [cssubmit](#). Make sure you read the “[Tips for using cssubmit](#)” on the CITS5501 website, and ***print*** off a copy of the submission confirmation.