CSC 648/848 Fall 2024 Milestone 4: Product description, QA and Usability Testing, Code review, Security self-audit

11-18-24

Objective:

The purpose of this milestone is as follows:

- To describe your product in language appropriate for broad audience
- To list **final committed list of P1fucntions** (which will be graded for quality delivery)
- To practice formal usability test plan development (necessary to do now, well before product launch)
- To practice formal QA
- To practice code review
- To verify that basic practices of secure SE are applied
- To check that all required non-functional specs are satisfied or on track
- To explore GenAI use in QA and usability testing

Milestone 4 will NOT receive instructor's feedback and will be submitted directly with Milestone 5 in the last class (see below)

Content and structure for Milestone 4 document for review:

-Title page must include

–"SW Engineering CSC648/848 Fall 2024"
Project/application title and name (you can use the name you chose for your application)
–Team number
–Names of students (team lead first – include e-mail for team lead)
–"Milestone 4"
–Date
–History table

Content of the document must have all sections as outlined below.

1) Product summary (e.g. how would you market and sell your product – about ½ page) – written to be easy to read by broad audience (users, techies, marketing, sales, executives…)

- **Name** of the product
- **Describe your product** in one paragraph (its main purpose, use text from executive summary) – use plain English applicable to broad audience. Say what is **unique** in your product
- **Itemized list of ALL major committed functions (your final priority 1 or P1 list),** 1 line per function your team shall actually deliver (and test for). This is your FINAL functional commitment e.g. failure to deliver on some of P1 functions results in reduced grade. Please write it in the list format (each item 1 line of text) so it is easy to check. List of functions is to be written in regular plain English readable by broad audience and **not in the format of formal specs or requirements**. It is recommended that you use P1 list recommended in M3.
- **URL to your product accessible to instructors**, on deployment server **(spell out full IP address)**

***** The above list of final P1 functions is used to grade your final project and will be checked on your final delivery for functionality and correct operation. Failure to deliver complete list of these committed functions or deliver them with bugs will result in reduced grade for SE Product rubric. ******

2) Usability test plan for selected function – max 2 pages (please consult class slides on this topic)

Select ONE major function (NOT login or registration) to be tested for usability. We recommend search or upload/post of data.

Write a usability test plan for this selected function. Please consult class material on developing usability test plan and questionnaire. This section is to contain separate sub-sections titled and enumerated exactly as below:

1. **Test objectives**: - what is being tested and why – up to 5 lines of text
2. **Test background and setup -** separate short paragraphs each covering:
   System setup, starting point, what HW tester needs to have
   Who are the intended users,
   URL of the system to be tested
   Test environment (home or lab, cameras present or now, monitoring or not, training before test required or not etc.
   (Up to 1 page)
3. **Usability Task description**: In this section provide the specific instructions to be given to the tester prior to doing the testing and filling out Likert survey

(subjective feedback of user after performing required tasks). Describe user tasks in the format of instructions for the usability tester - consult class slides on the way this has to be described.

4. **Plan for evaluation of Effectiveness**: Say how you would measure effectiveness (in max 10 lines of text) (here you outline the method, you do not need to do it)
5. **Plan for Evaluation of efficiency**: Say how you would measure efficiency (in max 10 lines of text) (here you outline the method, you do not need to do it)
6. **Plan for Evaluation of user satisfaction (Likert scale questionnaire):**
   Provide minim of **3 Likert scale evaluation entries** to be filled by tester after the above described tasks have been performed. Each entry has to have proper format inducing Likert assessment text and Likert answer scale to be chosen by the user (check class slides)

Note: we strongly recommend that team members NOT involved in UX use above subjective Likert scale usability evaluation and provide answers and feedback in the template defined in this subsection. Use this feedback to improve UX of your application. This is optional but strongly recommended.

3) QA test plan and QA testing - max 2 pages (please consult class slides on this topic)

For the same function you chose for the usability test, write a QA test plan (check class slides), with brief and separate sections as follows:

1. **Test objectives**: - what is being tested
2. **HW and SW setup** (including URL):
3. **Feature to be tested**
4. **QA Test plan: in table format**: This is the plan to be given to QA tester to execute your QA test plan. Contains min of 3 test cases and results of testing them on your system: appr. 1 page. You must provide QA test plan in a separate section in the easy to read tabular form allowing easy reading and analysis by management e.g. like presented in the class slides on SW QA.

   Suggested format for QA Test Plan Table: - table columns are:
   - test #;
   - test title;
   - test description (WHAT is being tested);
   - test input;
   - expected correct output;
   - test results (PASS or FAIL for each tested browser)

You also must perform the testing as per the plan above on 2 major WWW browsers of your choice and record the results in a form above (PASS or FAIL).

4) Peer Code Review:

1. Chose the code (substantial portion of it) related to the feature you used for QA and usability test. One team member should formally submit code to other team member(s) for peer review.
2. Peer review should be performed by one other team member of your team.
3. Peer review is to be done in writing (e-mail or related methods like in github) and review comments are to be included in the e-mail (general) and in code (specific)

Note: peer review must include checking for basic header and in-line comments, as well as proper and consistent class/methods/variable names and consistency with naming established in DATA section of Milestone 2. Commit comments in github must also be reviewed.

What to submit in M4 report to document code review? Note that including and sending code via e-mail attachment is not possible due to security reasons. Here is the process and what we recommend for submission here:

- Person whose code is being reviewed sends e-mail to reviewer with pointer to the code and asks for review
- Reviewer reviews the code in whatever way is most practical for you (e.g. commenting on code in repository, or using github review options)
- Reviewer sends summary of review in email back to coder

Submission for this sub-section: To document the above in M4 please submit the following: copy of all emails from above (screen shots OK) AND also include screen shot capture of commented reviewed code or the commented reviewed code in PDF format or similar but non- executable format (limit to 3-4 pages).

Important: It is critical that code reviews are friendly and helpful, intended to help and educate, and not to criticize. It is strongly suggested that you use peer review in the development of the whole system.

(Note that submission format above serves also the purpose to show that you have actually done it, hence it needs to have some details – this should also be very helpful in your job search)

5) Self-check on best practices for security – ½ page

- List major assets you are protecting in your team application
- List major threats for each asset above
- For each asset above say how you are protecting it (1-2 lines of text per each)
- Confirm that you encrypt PW in the DB
- Confirm Input data validation (list what is being validated and what code you used) .

NOTE: We require that at minimum you validate

- Search bar input for up to 40 alphanumeric characters
- SFSU customer registration e-mail to include "sfsu.edu" at the end
- Acceptance of terms (terms is a dummy link) in registration form

How to present security self-check plan: Best is to present this in the table below, include ALL assets and methods you plan to implement, in the text be brief

Asset to be protected	**Types of possible/expected attacks**	**Consequence of security breach**	**Your strategy to mitigate/protect the asset**
……			

6) Self-check of the adherence to original Non-functional specs – performed by team leads

One task of team lead is to ensure that all the requirements have been met, so this section does it for all non-functional requirements.

1) Copy all original 17 non-functional requirements from high level application document published at the very beginning of the class in Canvas ("How to start - Team Project …").
2) For each of the requirements above enter one of the three labels: DONE if it is done; ON TRACK if it is in the process of being done and you are sure it will be completed on time; or ISSUE meaning you have some problems and then explain it (if you have issues feel free to contact the instructors).

Note: you must adhere to all original non-functional specs as published in the original high level specification document. Failure to do so will cause reduced SE Product grade

7. Use of genAI tools like ChatGPT and copilot (mandatory) –focus only on usage in Milestone 4

GenAI allegedly can help in QA and usability evaluation - check class slides on GenAI. **Please try it even if it is not helpful – you need to start learning it! If it is not helpful just say so, see below.**

Please describe the following, in max 2 pages

- What genAI tool and version you used
- List tasks for which you used genAI tools and for each rate how useful it was, use LOW, MEDIUM, HIGH

- For each task above explain briefly how you used the tool and what benefit it offered.
- Provide examples of key examples and prompts
- Comment on anything else you found useful

Use of GenAI section will NOT be graded but you MUST show effort to use it – if not used 1 negative point will be subtracted from SE Process grade. (It is OK to use it, describe its usage and say that it was not used because of low value, and explain why).

Be sure to always check and verify GenAI output, YOU are in charge and responsible.

Submission and deadlines for Milestone 4 document

Milestone 4 will not receive instructor's feedback and will be submitted directly with Milestone 5 in the last class (Check Canvas) - so you must do it right the first time! M4 will hence be graded as part of M5 folder.

The whole student team submits one milestone document for Milestone 4 and includes it with submission of full documentation in M5 folder at the time M5 folder is due (see Canvas, last class), as follows:

When done with M4 store it in your github milestone folder as "CSC648-848 Spring 2024 Milestone4 Team*N*.PDF" (*N* is your team number)

Include M4 in your M5 submission at the end of the class (as per post on Canvas) – see M5 instructions

(Best is to finalize M4 work about a 2-3 days before final M5 demo and delivery since you will be doing QA then anyway).

Evaluation and grading:

There will be no instructor feedback on M4. M4 will be evaluated and graded with grading of final M5 folder for accuracy and completeness. Please consult class slides in developing M4 and do it right the first time e.g. for submission to M5 folder.