

Project: Applying security and usability in practice

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1 Introduction

Security, privacy and usability have all gained traction in recent years. High usability has been a must-have since smartphones and tablets entered the scene as an alternative to the personal computer. Privacy was probably best emphasized through the advent of EU General Data Protection Regulation (GDPR) in 2018. GDPR also implies strong security. This means that, for any product to succeed, it must have a strong emphasis on usability, privacy and security.

This project aims for you to practice and show that you are able

- to *evaluate* the usability of security solutions and *suggest* improvements that improve usability and security.
- to *evaluate* threats, possible protection mechanisms and to *design* a high-level approach to protection which considers usability.
- to *navigate* the field of information security, *distinguish* your own limits and where to search for solutions, e.g., experts or published research results that are relevant to the solution of a given problem.
- to *analyse and apply* the results of published research in the security field.

2 Assignment

Improve a current product or invent a new one. The focus should be to use or incorporate research results from the area of information security. E.g., it could be to improve privacy properties for streaming services [e.g., Lee+13] or improve usability and security for payment systems.

First look at the current usability and security in the area. Look for published research that improves the situation. Suggest improvements and methods to evaluate these.

	E	C	A
Design	No details	Somewhat detailed	Detailed
Functionality	Viable	Less optimal	Optimal
Theory	Not founded	Some base	Well-founded
Evaluation	Minimal	Good	Extensive

Table 1: The grading criteria as a grading matrix.

You should summarize your work in a report. First summarize how you performed your evaluation, what its results are. Then summarize your suggestions with motivations why these improve the situation.

Based on your report, make a presentation that will be a research-founded ‘sales pitch’ to your security-aware classmates.

3 Examination

The report must be handed-in in the course platform in PDF or PostScript format, no other formats are accepted. You can find the timeslots for presentations in the course schedule.

The report will be graded according to the following grading criteria:

Grade E You fulfil all the intended learning outcomes above. You should have identified a relevant problem, and given a solution to it. It must be a viable solution, however gaps and mistakes are allowed, if they don’t render your solution unusable.

Grade C You fulfil the criteria for E. Additionally, your evaluations and designs are *good* with *some base* in theory and, where applicable, the research literature. Gaps and errors are allowed if they only render your solution less optimal.

Grade A You fulfil the criteria for C. However, your evaluations and designs must be *extensive* and *well-founded* in theory and, where applicable, the research literature. Gaps and errors are not allowed in the solution unless they have been properly addressed and you have given a suggestion on an approach to how to start resolve the issue.

The grades B and D are intermediary grades. When assessing the multi-dimensional domain of your work, we will try to make as fair a projection as possible onto this linear scale. The criteria can also be found in matrix form in table 1.

The assignment may be done in groups of three to four people. However, if the proposed project is of proper size you may be excused from this limit. Talk to the tutor and motivate why you need to deviate from the group size.

References

- [Lee+13] M.Z. Lee, A.M. Dunn, B. Waters, E. Witchel and J. Katz. ‘Anon-Pass: Practical Anonymous Subscriptions’. In: *Security and Privacy (SP), 2013 IEEE Symposium on*. May 2013, pp. 319–333. DOI: 10.1109/SP.2013.29. URL: <http://dx.doi.org/10.1109/SP.2013.29>.