Definition of (non-)functional requirements
Functional requirement can be described as what a system is expect to do, by defining functions of the system. It may be a set of inputs, behaviors and outputs.
Non-Functional requirement, on the other hand, are requirements that are not directed related with the system. They can be seen as constraints, limiting or adjusting the system.

Examples of non-functional requirements in my research:
Low computational load (efficiency), it should run on my computer and on the computer I use to run experiments (portability), it also should be easy to test to ensure that the algorithm is behaving well (testability), it should be easy to reproduce (transparency), it should be able to be run in parallel while not disrupting other algorithms, and it should be able to integrate with other components as it will be incorporated to a package (integrability), easy to compare/vizualise results/outputs.

Examples of functional requirements in my research:
I must be able to choose the number of cores (if implement in parallel), it must receive an vector of numbers and a mathematical function and verify if that vector is a solution of that function, as well as rank different vectors of numbers given the same function, it should verify if two or more input vectors have the same length.

Use Case and Scenarios
Use case is a series of actions that a user performs with the system, generally for each use case there are many scenarios.
Scenarios are any kind of interaction between users
and the system with a specific goal, could be a success or a failure.

Figure 1: An Use Case (ATM system)

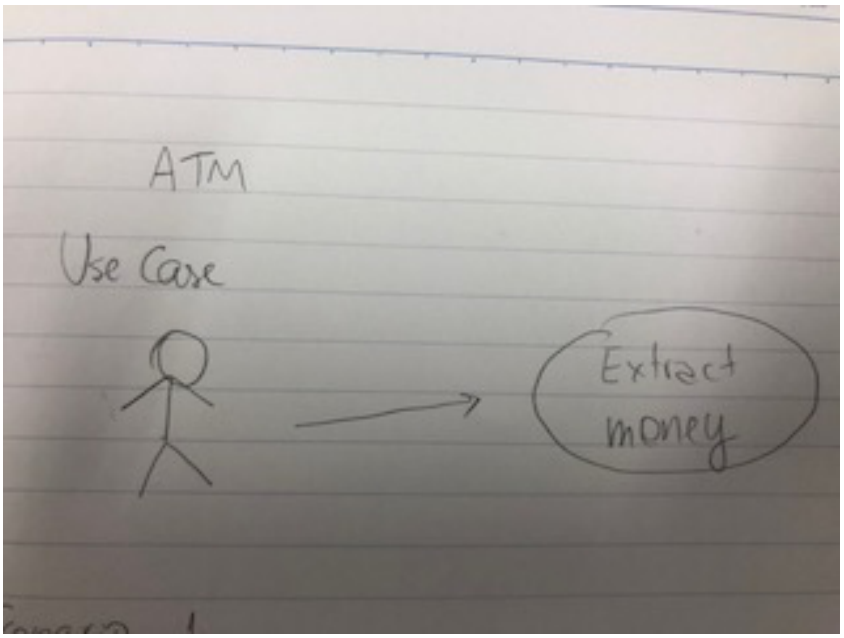


Figure 2: Scenario 1 - success!

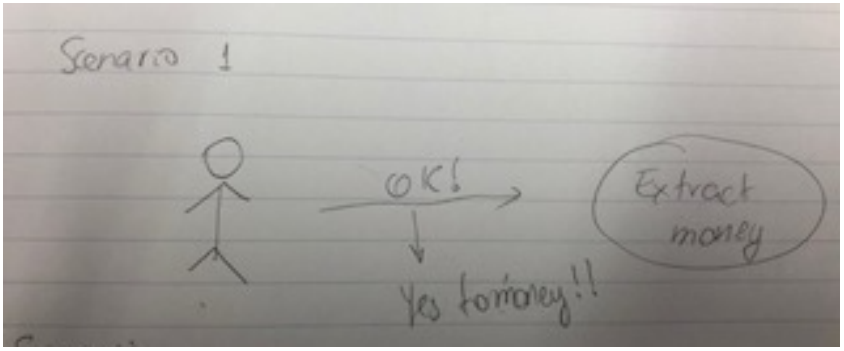


Figure 3: Scenario 2 - success!

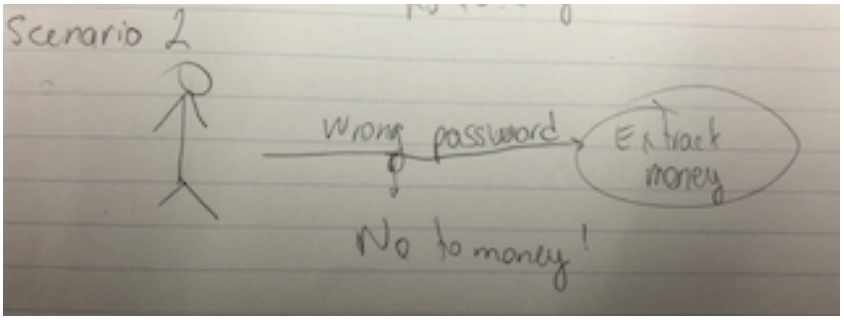
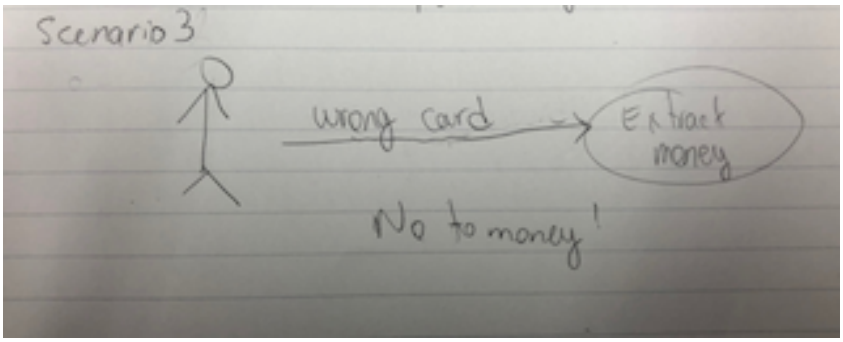


Figure 4: Scenario 3 - success!



Specification by Example
Are description with can server as basis for a design or implementation with the usage of instances that tries to help to construct the abstract idea of the requirement with different cases and illustrations. It is useful in situations where the parts involved in the specification phase have difficulty to understand each other, or when given concrete examples are simpler than the abstract idea, and also when a person may not really now what the requirement could be.