Requirement and Specification

This section specifies the requirements for our software. As mentioned before, the purpose of this software is to help users learn the principles and correctness of the sorting algorithm. Hence, users should have a basic understanding of what an algorithm is. Typical users include computer science students and those interested in sorting algorithms. The rest of this section presents the specifications of the software. The first part is an overall description of the software and its functional requirements. The second part outlines other related non-functional requirements of the software.

Functional Requirements

The lists give the main feature of what a stakeholder needs to be able to do. We prioritized the requirements in which the highest priority is 2, followed by 1.5, 1, 0.5.

Priority is 2:

A user will need to access a starting module according to individual mastery level.

A user will need to select a module of a type of sorting algorithm.

A user will need to see the animation, which shows the sorting algorithm process.

A user will need to control the progress bar of the animation (previous step, next step, double speed, autoplay, pause, reset)

Priority is 1.5:

A user will need to follow the guide from the most basic algorithms.

A user will need to export learning notes.

A user will need to follow the novice operation guidance since it is the first time to access it.

Priority is 1:

A user will need to back to the latest learned.

A user will need to compare different sorting algorithms’ time complexity.

A user will need to see his or her learning progress.

A user will need to finish an after-class exercise.

Priority is 0.5:

A user will need to play a dragging blocks game.

A user will need to press the Breakpoint button to see the output for each step.

A user will need to share and promote the software.

Unfunctional Requirements

1. Interoperability

The software should be able to run on windows.

1. Manageability:

The software should be able to provide a platform for users to write feedback to connect with developers.

1. Usability:

The software should allow users to input data by themselves, or systems will randomly generate input (random, nearly sorted, reverse, few unique).

The software should be Multilingual. The version of English, Chinese and other languages should be available.

The software should be able to provide the code using C, Python, and Java language.