1. Introduction

For learning algorithms and programming, sorting algorithms are considered as an essential part. However, they are not easy to be fully understood and implemented by beginners. Animation is now widely used in educational area. Many researches have proved the effectiveness of algorithm animation in teaching and learning**[NUM]**. Though there are many existing similar software in the market, few of them are used among students, who are the main stakeholders for this type of software. Besides, many of them find difficulty when learning sorting algorithms. Therefore, developing a sorting algorithms animation software is necessary. Algorithms’ correctness is a more abstract concept, but useful for leaning, including this in the software could help advanced learners.

In this chapter, brief introduction of this program will be presented in three parts, motivation of doing this project, team’s aims and a general description of work the team plan to do.

**reference**

Végh, L., & Stoffová, V. (2017). Algorithm animations for teaching and learning the main ideas of basic sortings. Informatics in Education, 16(1), 121–140. <https://doi.org/10.15388/infedu.2017.07>

1. Background and Related Work

To know more about situation in the existing market, background research has been done. There are two sections in this chapter, first it will claim some collected background information. Then, analysis to both technical implementation and existing similar software are included in literature review part.

1. Software Requirements Engineering

Software requirements engineering is a process of how the team gain proper and reasonable requirements from stakeholders. It is the foundation of this project**[NUM]**. Requirements should be precise and complete for team to develop further steps based on them. It consists of requirements elicitation, requirements specification and requirements validation. Main stakeholders of this software have been confirmed as year 1 computer science students and beginners in learning programming. Other stakeholders are advanced learners who are interested in algorithm correctness and algorithms teachers. To gain requirements from them, focus group, a survey, and an interview to algorithm teacher have been accomplished. Brief reports are presented in requirements elicitation part. After analyzing and collating data gained from last stage, specific requirements and system specification have been confirmed. Requirements specification will include this. Then, in requirements validation part, user story is produced to further enhance the team’s understanding of requirements.

**Source**: Brian Lawrence, Top Risks of Requirements Engineering

1. Design

To design this software, its basic usage and appearance should be confirmed first to help next stage’s implementation. UMLs and low-fidelity prototype are helpful in establishing this part. Team 10 has drawn use case diagram and sequence diagram.

1. Implementation

In this chapter, implementations that have done by the team will be presented. Basically, team 10 has produced a high-fidelity prototype. Further, decisions of technical research have been made. Results and analysis are presented as follows.

1. Problem Encountered and Risk Management

As a team, conflicts cannot be avoided during teamwork. To effectively solve these problems, team 10 has done risk management before the project started. This chapter also includes problems that team 10 has already encountered.