SWE 205: Introduction to Software Engineering

Term 191

Software Requirements Specification (SRS)

Project:

Painting Software “MyPaintShop”

Group 11 Names:

- ABDULLAH ALFAIFI -
- FAWAZ ALESAYI -
- WALEED ALFAIFI -
- YAZEED ALJOHANI -

Contents

Contents 1

1. Introduction 2

1.1. Purpose 2

1.2. Scope 2

1.3. Overview 2

2. Process Model 3

3. User Requirement 3

3.1. Functional Requirement 3

3.2. Non-functional Requirements 5

3.2.1. Product Requirements 5

3.2.2. Organizational Requirements 5

3.2.3. External Requirements 5

4. System Requirement 6

4.1. Actors 6

4.1.1. The User 6

4.2. Use Case diagram 7

4.3. Brief description of the functionality 8

4.3.1. User 8

4.4. Non-functional Requirements 17

5. Prototype display 17

6. System Evolution 18

7. References 19

8. Conclusion 20

8.1. Day 1: 20

8.2. Day 2: 20

8.3. Day 3: 21

8.4. Day 4: 21

1.Introduction

1.1. Purpose

This document describes the requirements and constraints of the “MyPaintShop” software. It will also highlight the purpose and give full declaration for the system requirements. It is intended for the company to review and assess.

1.2. Scope

This document focuses on the requirements of the “MyPaintShop” software. Which include features, specific requirements. And use case specification for the user.

1.3. Overview

The documents will discuss the “MyPaintShop” software, mainly describing its functions and requirements. It will show the single actor in the system, specifically, the user.

2. Process Model

We chose the *Waterfall model* for the following factors:

- The requirements are clear for the software.
- There is a deadline to submit the requirements, so it cannot be modified later.
- **The company listed Waterfall model to be used in developing the software.**

We rejected the other process model because the company requested that the *Waterfall Model* must be used.

3. User Requirement

3.1. Functional Requirement

- **Toolbar**

  the program shall display a toolbar and menu that allow the user to choose shapes and colors.

- **Add Shapes**

  the user shall be able to draw shapes from the toolbar

- **Select Shapes**

  the user should be able to select shapes and see the selected shape's properties from the bottom of the program.

- **Remove Shapes**

  The user shall be able to remove the selected shape.

- **Duplicate Shapes**

  The user shall be able to duplicate the selected shapes.

- **Change Shapes Properties**

  The user should be able to change shape properties such as, size and color ("Red, Blue, Green, Orange, Yellow, Purple, Black.), and the filling color. **Also, the changes should be made in real-time**.

- **Save File**

  V1: The user shall be able to save the file in an editable format

  V2: The user shall be able to save the file as an image.

- **Edit File**

  V1: The user should be able to open the file and make changes on it.

  V2: The user should be able to open an image and draw on it.

3.2. Non-functional Requirements

3.2.1. Product Requirements

- **Performance**

  The software should be responsive, and there should not be any delay between actions.

- **Usability**

  The software should be easy to use.

- **Programming Language**

  The programming language used in developing the software shall be ***Java***

3.2.2. Organizational Requirements

- **Delivery**

  The software should be delivered after **2 months**.

- **Modeling Language**

  The modeling language used in designing the software should be ***UML (Unified Modeling Language)***

- **Process Model**

  The process model used for developing the software should be the ***Waterfall Model.***

3.2.3. External Requirements

Not applicable for this project.

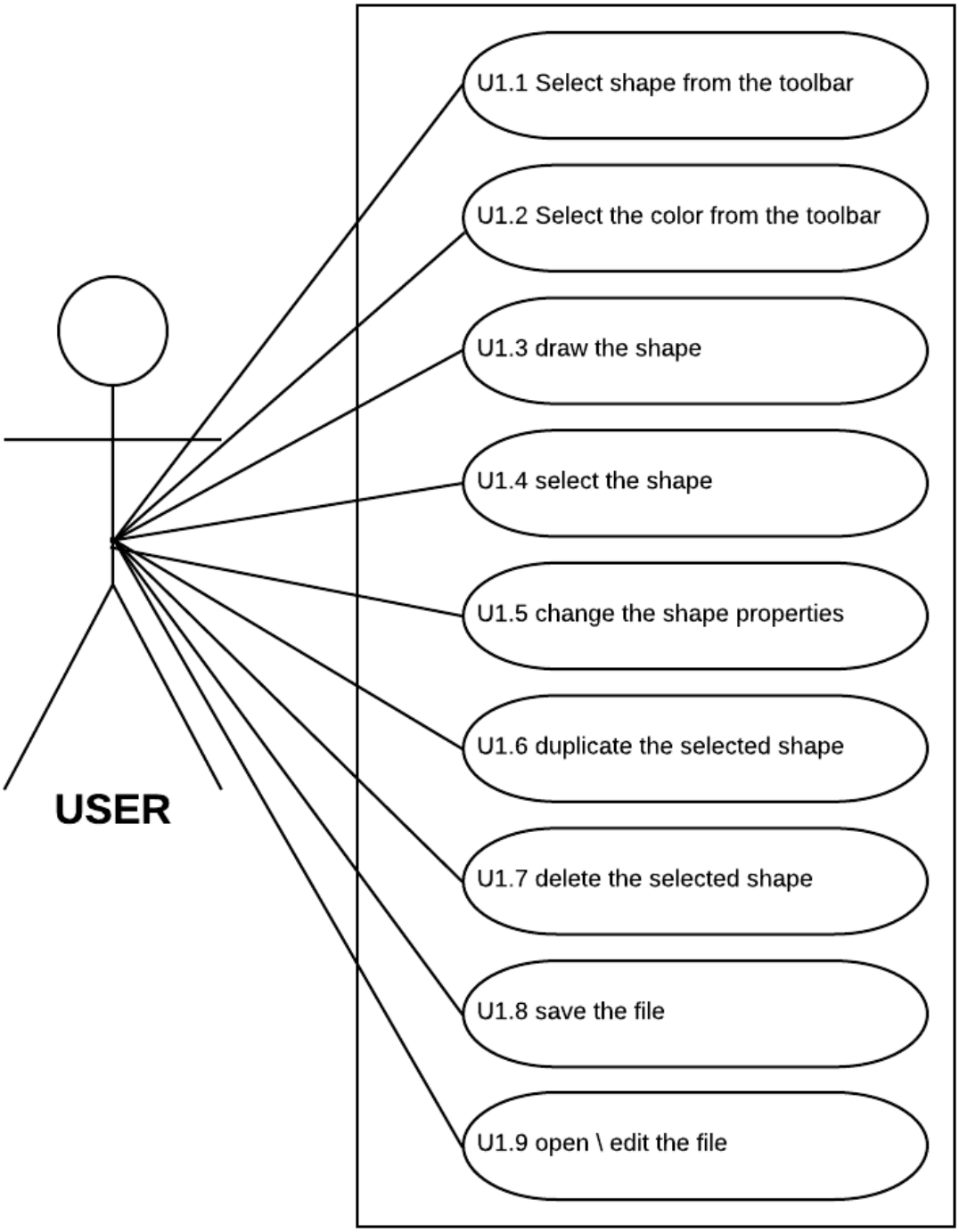
4. System Requirement

4.1. Actors

4.1.1. The User

The user is the primary user for this software, and he can select, draw shapes and save his work.

4.2. Use Case diagram



4.3. Brief description of the functionality

4.3.1. User

4.3..1.1. U1_01

Use Case Number	**U1_01**
Use Case Name	**Select shape from the toolbar**
Precondition(s)	**There are available shapes in the toolbar.**
Successful Post Condition	**The shape is selected**
Priority	**Very High**
Difficulty	**Easy**
Related use case	**None**
Version	**02**

Main flow:

1. The user will click on the shape icon.

2. The Shape will be chosen.

4.3..1.2. U1_02

Use Case Number	**U1_02**
Use Case Name	**Select the color from the toolbar**
Precondition(s)	**There are available colors to select from**
Successful Post Condition	**The color is selected**
Priority	**Very High**
Difficulty	**Easy**
Related use case	**None**
Version	**02**

Main flow:

1. The user will select the color from the toolbar
2. The color will be chosen

4.3..1.3. U1_03

Use Case Number	**U1_03**
Use Case Name	**Draw the shape**
Precondition(s)	**The shape must be selected.** **The color must be selected**
Successful Post Condition	**The Shape will be drawn on the canvas**
Priority	**Very High**
Difficulty	**Hard**
Related use case	**U1_01, U1_02**
Version	**02**

Main flow:

1. The user will draw the shape in canvas by dragging on it
2. The Shape will be drawn

4.3..1.4. U1_04

Use Case Number	**U1_04**
Use Case Name	**Select the shape from Canvas**
Precondition(s)	**The shape must be drawn**
Successful Post Condition	**The shape Is selected** **The shape's properties will be shown**
Priority	**High**
Difficulty	**Medium**
Related use case	**U1_05, U1_03**
Version	**01**

Main flow:

1. The user will select the shape from the canvas by clicking on it.
2. The shape will be selected, and its properties will be shown**.**

4.3..1.5. U1_05

Use Case Number	**U1_05**
Use Case Name	**Change the Shape's Properties**
Precondition(s)	**The shape must be selected from the canvas** **The user makes changes on the shape's properties.**
Successful Post Condition	**The shape's properties have been changed**
Priority	**Low**
Difficulty	**Hard**
Related use case	**U1_04, U1_03**
Version	**02**

Main flow:

1. The shape's properties panel will become available such as dimensions, color and the filled in color.
2. <A>The user enters new dimensions or color for the shape
3. The shape updates with the new dimensions or colors in real-time.

Alternative Flow:

1. The user enters a dimension with negative values in the shape's properties panel.
2. The program will replace the negative by the previous assigned values.

4.3..1.6. U1_06

Use Case Number	**U1_06**
Use Case Name	**Duplicate the selected shape**
Precondition(s)	**The Shape must be selected.** **The user copies the shape.**
Successful Post Condition	**The shape is duplicated**
Priority	**Low**
Difficulty	**Easy**
Related use case	**U1_03, U1_04**
Version	**04**

Main flow:

1. The user will right click the selected shape and press duplicate.
2. The shape will be duplicated.

4.3..1.7. U1_07

Use Case Number	**U1_07**
Use Case Name	**Delete the selected shape**
Precondition(s)	**The shape must be selected,** **The user deletes the shape**
Successful Post Condition	**The shape is deleted**
Priority	**High**
Difficulty	**Easy**
Related use case	**U1_03, U1_04**
Version	**01**

Main flow:

1. The user will right click on the selected shape and press delete.
2. The Shape will be removed from the canvas

4.3..1.8. U1_08

Use Case Number	**U1_08**
Use Case Name	**Save the file**
Precondition(s)	**None**
Successful Post Condition	**The file is saved as an image.**
Priority	**High**
Difficulty	**Medium**
Related use case	**None**
Version	**02**

Main flow:

1. The user clicks on File from the menu bar and click on Save
2. The dialogue box will appear
3. The user will choose the name and directory of the file
4. The user saves the file by pressing the save button

Alternative flow:

1. At any point in the Main flow, the user cancels the operation.
2. The user is taken back to the main program

4.3..1.9. U1_09

Use Case Number	**U1_09**
Use Case Name	**Open / Edit the file**
Precondition(s)	**There must be an image on the user's disk.**
Successful Post Condition	**The file is opened.**
Priority	**Low**
Difficulty	**Medium**
Related use case	**U1_08**
Version	**02**

Main flow:

1. The user clicks on File from the menu bar and clicks on Open File
2. The dialogue box will appear
3. The user chooses his file
4. The file will be opened ready to be edited.

Alternative flow:

1. At any point in the Main flow, the user cancels the operation.
2. The user is taken back to the main program.

4.4. Non-functional Requirements

- **Efficiency**

  The program shall not waste a lot of memory and CPU.

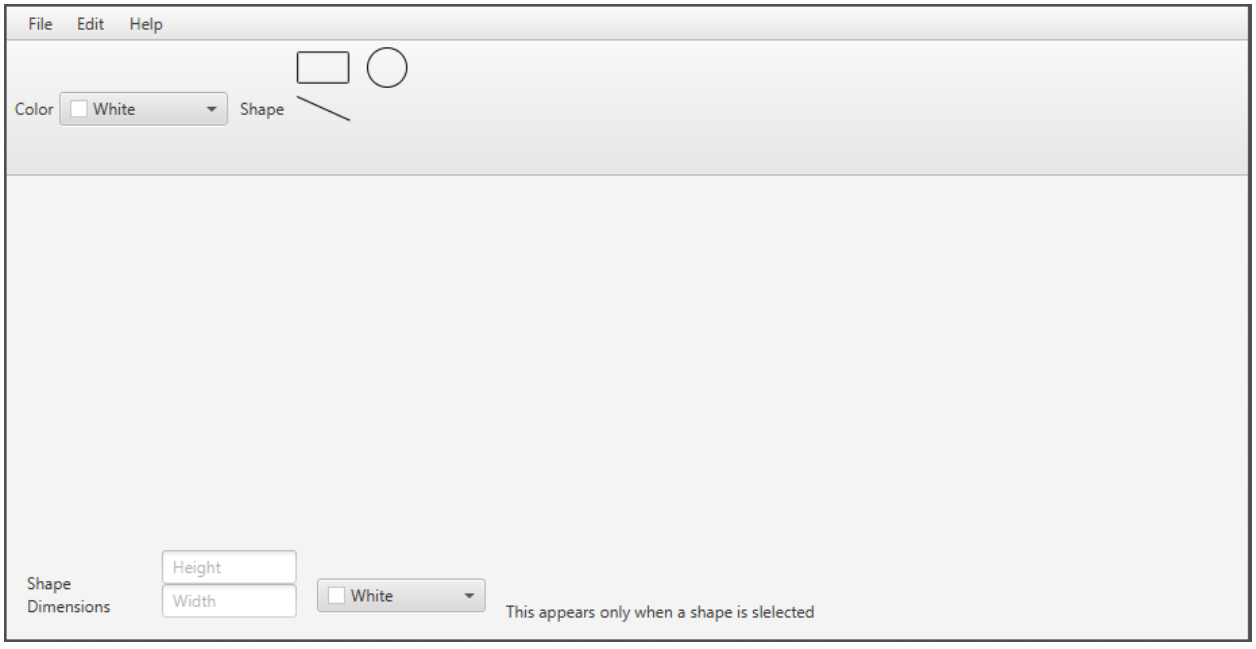
- **Usability**

  The program interface should be simple; thus, the user can use it without looking for instructions.

- **Maintainability**

  the software shall be maintainable to enable features to be added later.

5. Prototype display



6. System Evolution

- **Brush**

  The software will provide a brush tool with user customizable brush sizes, styles, and colors.

- **Keyboard shortcuts**

  The software will have keyboard shortcuts for opening and saving files. It will also have shortcuts for undo, redo, copy, cut, paste, and delete functionality

- **Custom file type**

  Files made by “MyPaintShop” will have a .MPS extension which allows the canvas to be saved with all its shapes and properties so that it can be edited later.

7. References

7.1. Sommerville, I. (2018). Software Engineering (10th ed.). München: Pearson.

7.2. https://www2.cs.duke.edu/courses/cps108/spring04/readings/usecaseslarman.pdf

8. Conclusion

8.1. Day 1:

- **Sunday, October 11, 2019**
- The team had a meeting from 5:30 p.m. to 10:00 p.m. and did the initial brainstorming for the project. We read the project description and listed out its requirement, then categorized its requirements into functional and non-functional. In addition, we started to work on the use case diagram and wrote out the names of the use cases. Work was divided equally among the team.

8.2. Day 2:

- **Tuesday, October 15, 2019**
- The team had a meeting from 6:00 p.m. to 10:30 p.m. and continued to work on the use cases. We wrote out each use case description and edited some of the requirements to match the use cases. We also wrote the main flow and

alternative flow for each use case. We did not divide each use case to a group member. Rather, we worked on each use case as a group and discussed how its description should be written and what should be its main flow and alternative flow.

8.3. Day 3:

- **Sunday October 20, 2019**
- The team communicated online about the final steps of the SRS document, made the prototype, and made slight changes according to the company's wishes.

8.4. Day 4:

- **Wednesday October 23, 2019**
- The team wrote this conclusion and the contribution of each group member. They also reviewed the document and agreed upon it.

Percentage of contribution of each member (Leader is in red)

Member	Percentage
Abdullah Alfaifi	**25%**
Fawaz Alesayi	**25%**
Waleed Alfaifi	**25%**
Yazeed Aljohany	**25%**