Software Requirements Specification (SRS) Document

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Brief problem statement

The virtual labs website is an experiment-based platform for interactive learning. It has many courses in different disciplines. But since the website was created a long time ago at that time the technologies that were used became obsolete and hence, we need to recreate and improve the simulations in every experiment of the course given to us using the latest web technologies and libraries like HTML, CSS, JS etc. and improve portability and usability. For our project we are given the course VLSI.

System requirements

The designed product should work on any latest and popular browsers like Chrome, Firefox, Edge, Opera, Safari etc.

The technologies required for the project are

1. HTML
2. CSS
3. JavaScript
4. JavaScript libraries like anime.js, JointJS, p5.js and Paper.js

User's profile

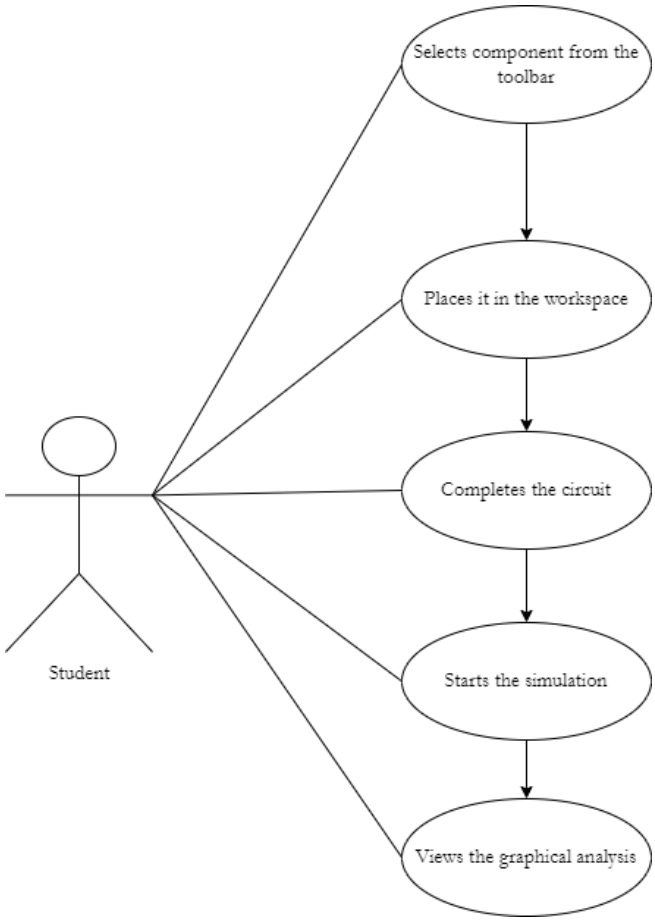
1. Students who want to learn VLSI. We assume that the students are familiar with basic functions and operations of a web browser and have a minimum computer knowledge which help them to the simulations and learn the concepts.

Feature requirements (described using use cases)

No.	User Case Name	Description	Release
1.	Tool Bar	The simulation page contains a tool bar of components from which the user can drag and drop components to the workspace.	R1

2.	Error Detection	If the user clicks on a component which is not necessary for that experiment, we need to alert him/her	R1
3.	Workspace	It is in the workspace where the user does all the simulation parts and learns the concept	R1
4.	Simulate button	It is a button and on clicking it the simulation starts and the graph gets plotted.	R1
5.	Graphical analysis	It is the place where we show the simulation's analysis graphically.	R1
6.	Change in Experiment content	We need to change the experiment procedure according to the new simulation.	R1
7.	First five experiments	Simulation of the first five experiments	R1
8.	Next five experiments	Simulation of the next five experiments	R2

Use case diagram



Use case description

Use Case Number:	UC-01
Use Case Name:	Tool Bar
Overview:	The simulation page contains a tool bar of components from which the user can drag and drop components to the workspace
Actors:	Students
Pre-condition:	None
Flow:	Main (success) Flow: 1
Post Condition:	The next step is to select a component from the tool and check if there is an error.

Use Case Number:	UC-02
Use Case Name:	Error detection
Overview:	If the user selects a component which is not required for the experiment, we need to alert him/her.
Actors:	Students
Pre-condition:	Select a component from the Tool Bar to place it in the workspace.
Flow:	Main (success) Flow: 2
Post Condition:	If there is no error, then place the selected component in the workspace

Use Case Number:	UC-03
Use Case Name:	Workspace

Overview:	It is in the workspace where the user does all the simulation parts and learns the concept.
Actors:	Students
Pre-condition:	Select a component from the Tool Bar to place it in the workspace.
Flow:	Main (success) Flow: 3
Post Condition:	The next step is to select all the remaining components, place and connect them properly to connect the circuit

Use Case Number:	UC-04
Use Case Name:	Simulate button
Overview:	It is a button and on clicking it the simulation starts and the graph gets plotted.
Actors:	Students
Pre-condition:	Complete the circuit in the workspace by connecting all the components
Flow:	Main (success) Flow: 4
Post Condition:	The next step is to view the generated graphical analysis.

Use Case Number:	UC-05
Use Case Name:	Graphical analysis
Overview:	It is the place where we show the simulation's analysis graphically.
Actors:	Students
Pre-condition:	Click on the simulate button to generate graph of the simulation.
Flow:	Main (success) Flow: 5
Post Condition:	Change the experiment condition based on simulation.

Use Case Number:	UC-06
Use Case Name:	Change in Experiment content
Overview:	It is the place where we show the simulation's analysis graphically.
Actors:	Students
Pre-condition:	We need to change the experiment procedure according to the new simulation
Flow:	Main (success) Flow: 6
Post Condition:	None

Test Backlog