# Overall Project Synopsis

In order to have better understanding of the technologies available for Service, we will be creating a basic LMS web application in both React and Angular 2. The LMS tool will allow for the creation of online tests that can be completed by the user.

# In-Depth Requirements

## User Roles

* Administrator
  + Can Create, Update, Delete tests
  + Can review all test attempts
* User
  + Can view list of tests which can be taken
  + Can take tests
  + Can review their previous test attempts

## System Requirements

* Tests
  + Tests have multiple-choice questions
    - Questions consist of a question field and an array of answers
    - Questions can have notes containing information about the question
    - Question have ordering in the test unless randomized
    - Answers are either correct or incorrect
    - Answers can be added, edited, or deleted by administrators
    - Answers have ordering in relation to each other unless randomized
  + Tests can be activated or deactivated
  + Must have:
    - Title
    - End date
    - Randomly sorted questions or not
    - Passing score
  + Optional fields:
    - Description
    - Start date
    - Active/Inactive
    - Maximum number of attempts (default to 1 if not entered)
  + Test scores can be viewed by the administrators and by the user who took the test
  + In review, correct answers and incorrect answers must be indicated
* Test Attempts
  + Have Test ID and User ID
  + Has test score
  + Marks test as passed or failed
  + Has answers to test questions
* Administrators
  + Administrators can create tests
  + Administrators can delete tests
  + Administrators can edit tests
  + Administrators can view test scores of users
* Users
  + Required fields: Name, password, admin status
  + Optional fields: Address, city, state, zip, country, email
  + Any user can take any test
  + Users can review previous attempts of a test
  + After taking a test, user is presented their results

## Front-End Requirements

* Test List Page
  + Displays a list of tests that can be taken
  + If a test has been taken, display the user’s current highest score
  + Displays the number of attempts left on the test
  + Displays “available until” for a test
  + Tests can only be started after the start date and before the end date (otherwise not in the list)
* Take a Test
  + Each question is displayed with the possible answers beneath it
  + Test questions are displayed in order, unless test is specified as randomly ordered
  + Question answers are displayed in order, unless question is specified as randomly ordered
  + User can click on answers to select them
  + User submits test after answering all questions
* Test Review
  + Displays list of test questions
  + Test questions show all possible answers
  + Incorrect answers selected by user will be indicated
  + Correct answers are always indicated
  + Displays test score
* Individual Test Stats
  + Only administrator can access test stats
  + View who has taken the test and their scores
  + Clicking on name of user navigate to that user’s test review
* Error Handling
  + Two types of errors
    - Application Error (e.g. submitted form is missing fields, end date comes before start date, etc.)
    - System Error (e.g. lost connection to database, divide by zero, etc.)
  + Error reports to user
    - All errors must be displayed to the user, not just the first one
    - Error reports must contain source and reason of the error