

## Software Development Technical Challenge

[What Is Software Development?](#)

The difference between someone who can write code and a developer is that the developer is paid to solve somebody else's problem. Therefore, a large part of the software development process is understanding somebody else's requirements before designing, developing, and proving that a solution delivers what was asked for.

**N.B.** there will be occasions when what is asked for is often not what is needed. If a developer has done their job well, they will have worked through a process to uncover what is truly needed!

To complete this activity you don't need experience of writing code or developing solutions as everything can be Googled and adapted. **We are more interested in your curiosity attention to detail and desire to solve the problem.**

In this activity you will review a number of [user stories](#) that contain the requirements for a software solution. You will then be asked to identify a suite of tests that must be passed if your solution is 'working.' Finally you will get to cut some code and create a simple webpage using the most basic of tools, literally a text editor and a browser. Finally, you will be asked to reflect on your experience. This reflection and how you approached this challenge will be discussed at the next stage of the recruitment process.

There are links to tutorials and reference guides on [HTML](#), [CSS](#) and [JavaScript](#) just click the words.

This video [here](#) will show you how to create a web page with a text editor.

**Tasks: In this activity you will:**

Review a series of user stories.

Define tests to prove that your solution works.

Develop a simple web page using HTML, CSS, JavaScript.

## Task 1: Review Requirements:

### Scenario:

As part of their online offer a training business wants to be able to validate a subscriber's name, email address and credit card number when they book a course.

The commercial director, marketing director and CTO were identified as stakeholders for this app and identified the User Stories in Appendix A:

- 1) Review the User Stories in Appendix A

Often User Stories are missing all the information a developer needs to develop a solution. These situations can be tracked through issues or by arranging a session to discuss the user stories to get clarification.

- 2) Record the issues you can find in the User Stories?

Create a list of issues that you would like to discuss with the stakeholders.

ID	User Story ID	Issue / Defect
1	10	Example: 'As CTO I need the application for follow our UX (User Experience)' The UX guide is not available.
2		
3		
4		
5..		

If we cannot get answers from the stakeholders, then we can use assumptions to carry on developing.

3) Record the assumptions you need to make to allow you to carry on developing?

ID	Issue ID	Assumption
1	1	Example: Only the UX requirements in the user stories will be developed. i.e. Issues being highlighted to the user ASAP, preferably when they are still entering a field. Correct fields should be shown as green Errors should show in DN Pink
2		
3		
4		
5..		

Once we have identified the issues, made assumptions about the areas where we don't have enough information, we are ready to start thinking about our solution.

Often, developers will identify the tests that their code needs to pass to be considered working. This approach is called [Test Driven Development](#).

Test cases are used to define the tests that we will execute to prove we have developed a solution that meets the User Story Requirements. These can be grouped into a test suite.

We've simplified things for this example and have provided a Template Test Suite for you to add your tests to in Appendix B. The Test Suite Template contains the following columns

**Test Case ID** A unique ID for the Test case used in the defect report if the test fails,

**User Story ID** Test cases should relate back to a User Story, if it isn't in a user story, it shouldn't be tested...

**Acceptance Condition** User Stories will often contain acceptance criteria that the software tester will propose, and the stakeholders will agree to. i.e. Our User Story could say As a user I need to enter my name so that I can... acceptance criteria for that story could be: Western Style First Name and Surname would be a valid name. Title, First Name and Surname would be valid. You can define the acceptance criteria.

**Preconditions** What needs to have happened before we can execute this test?

**Test Data** What test data do we need to use?

**Steps / Instructions** What does the tester have to do?

**Expected Results** What do we expect the outcome to be?

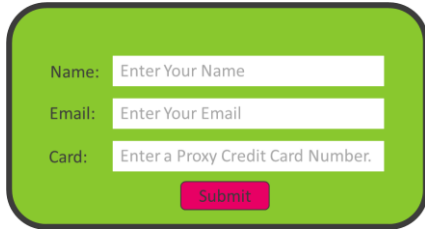
**Actual Results** What actually happened (this can include screenshots as evidence.)

**Pass / Fail** Did the Actual match the Expected?

**Notes / Defect ID Raised.** Any notes from the test or If the test failed what changes did you make to the code?

- 4) In the Template in Appendix B create a suite of tests that the solution must pass to be considered working.
- 5) Development time: using just a text editor and a browser create your solution.
- 6) Update your test results as you develop, you can show when tests fail. (Its really OK), just add a new line underneath the test and note the change you made to the code. This will show how you've repeated the Dev / Test cycle till all tests are passed.
- 7) Create a few paragraphs reflecting on each of the points below:
  - a. How was working from User Stories?
  - b. How was TDD?
  - c. What have you learned?
  - d. What would you do differently?
- 8) Prepare an email that contains:
  - a. The completed tables in this Document
  - b. Your code
  - c. Screenshots of your solution
  - d. Your reflection
- 9) Send your email to [hello@dn-uk.com](mailto:hello@dn-uk.com)

## Appendix A – User Stories

ID	Stakeholder	User Story
1	Commercial Director	As a user I need to be able to insert my name into the form
2	Commercial Director	As a user I need to be able to insert my email into the form
3	Commercial Director	As a user I need to be able to insert my Credit/Debit Card into the form
4	Commercial Director	As the Commercial Director I need users to only be able to enter valid names
5	Commercial Director	As the Commercial Director I need users to only be able to enter valid email address
6	Commercial Director	As the Commercial Director I need users to only be able to enter valid credit card
6	Marketing Director	As the marketing director I need the page to conform to our branding guidelines and use our brand colours: Green RGB 137,200,46 Hex 89c82e Grey RGB 60,60,59 Hex 3c3c3b Pink RGB 231,0,100 Hex 700064
7	Marketing Director	<p>As the marketing director I need the page to be consistent with our other pages i.e., using the same Calibri font and text size, centred horizontally and vertically and to match the wireframe below:</p> 
8	CTO	As CTO I need the application to reduce the load on the back-end server, validation should be done on page.
9	CTO	<p>As CTO I need to ensure all applications can be accessed by all users, the application needs to conform to w3c accessibility initiative. <a href="#">Introduction to Web Accessibility   Web Accessibility Initiative (WAI)   W3C</a></p> <p><a href="#">Checklist of Checkpoints for Web Content Accessibility Guidelines 1.0 (w3.org)</a></p>
10	CTO	<p>As CTO I need the application for follow our UX (User Experience) guide so that each user has the best possible experience. This should include any issues being highlighted to the user when they are still entering a field of as soon as possible after.</p> <p>Correct fields should be shown as DN green, errors shown in DN Pink.</p>
11	CTO	As CTO I need to ensure that any data capture is secure and there is no risk of database corruption through SQL injection. Only standard upper / lower case. letters and printable characters: !#\$%&'*+,-/=^_`{ }~ should be allowed in all fields.
12	CTO	As CTO I need to ensure that all accepted credit cards conform to the LUHN algorithm.
13	CTO	As CTO I need to ensure that all applications can run on all common browsers, devices and screen sizes.
14	CTO	As CTO for this exercise, I need an Email to <a href="mailto:test@dn-uk.com">test@dn-uk.com</a> be sent containing the validated information when a user presses a 'Submit' button.

## Appendix B Simplified Test Suite Template

Below is a simplified Test Suite Template this contains the test cases that need to be completed.

Copy this into Excel. Tools such as Jira and Azure DevOps are often used to track tests for User Stories.

[illegible]