

Testing

Customer Relationship Management System (CRM)

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This document will contain:

Planning

- * A test plan to outline the how the whole process will be carried out effectively
- * My testing strategy for all the different parts of the system

Test Execution (iterative process and based off of the planning)

- * The testing execution on the system with proof
- * Proof of the correction and management of the defects found from the tests

Delivery Of The System

- * System given to the user with details on how they should test that it meets their requirements with a list of what they should be checking (related to the objectives)
- * Receive feedback and amend program to meet their requirements.

Test Plan

The testing process has 3 objectives:

- * discovery of errors and flaws that could cause a crash of the system, result in functionality and features of the system being unusable, security flaws that could result in leaving users vulnerable.
- * Identifying the cause of the errors, finding a solution that amends the errors, implementing the solution, then lastly proving that it works with the amendment.
- * Once the system is error reduced, it will need to be tested against the objectives/ system specification and the success measured on whether it meets the success criteria for each

Errors in the system that I will try to discover

The system will need to be tested for a various types of errors. Tests will need to be carried out to find typical system flaws, these include: syntax errors (improper use of the language's syntax such as: misspellings, missed semicolons, etc...), runtime errors (errors that will only become apparent upon actually running the system in various different ways such as: opening a file that has not been created, dividing a variable by zero, etc...). And logical errors (unexpected behaviour caused by flaw in the design of the program such as: displaying the wrong output message, reading data from the incorrect file, etc...).

The basic security of the site needs to be tested, common website flaws that I will try to exploit include: cross site scripting (where text field post requests don't get sanitised and as a result javascript code can get executed and even stored on the server), injection (database queries get sent in the url bar or in anywhere a post request can be made and as a result data from the database can be retrieved or the database can be exploited to allow users to gain access to places on the site they don't have authorisation to be).

Scaling flaws will need to be identified (accessing data from files with massive amounts of data stored, will the system crash, take forever to load the data, etc...)

Types of data I will use to identify errors.

These types of test data will be used to identify errors in the code

It is important to note that not all types of data will be used to test the system as extreme testing might not make sense in some cases. Erroneous data will sometimes need to be made to throw an error to the developer. I could also handle erroneous data input cases so that the program continues.

- * **Typical Data** This should be data that the sub-procedure is expecting to handle
- * **Extreme Data** This will be data that the sub-procedure should be able to handle but will be at the extreme polar ends of what can be considered acceptable (the lowest and most upper value when dealing with a range).
- * **Erroneous Data** This will be data that the sub-procedure should not be expected to use to produce an output (outside of the range of what is expected)

Tactics I will use to discover errors and how they should be handled if found

- * **Syntax errors** should be identified by the IDE WebStorm. These should be amended throughout the process of developing as they are errors that will be made blatantly obvious while developing the system and the IDE will even offer suggestions on how to resolve the issue.
- * **Run time errors** will be discoverable by running the code with different inputs and seeing if the system crashes/ an error or warning message gets returned. Runtime errors will be easier to identify in smaller amounts of code as I can directly test them for all possible inputs. It will therefore make sense to test for runtime errors in individual sub-procedures (unit testing). There are many different types of run time errors and so approaches to solving each of the flaws will vary. However, run time errors are usually caused by a case that the code is unable to handle and so the most common way to mitigate these issues will be to encapsulate an input with a form of exception handling such as a try catch or by validating the input before allowing the code to be executed with the input.

- * **Logical Errors** will be identified when the system is run and not operating as expected. To find these errors, I will need to test specified inputs and observe the outputs. Then, the outputs should be compared to the value I would expect to have returned. If the value I have returned back is not the same as the expected return value then there is likely a logical error in the code.
- * **Scaling Issues** will be identifiable by imitating a scaled version of the site (lots of data held) and seeing how the system handles it. If there is a crash or the system starts running slow when it would usually run fine with small amounts of data, it is likely due to an inefficient algorithm. If the amount of data stored is too large for a user to ever achieve in a realistic environment, it will be ignored. If it is a number which is possible to obtain, there will need to be a cap of data that can be stored and any data adding functionality will need to be prevented. The user will also need to be aware of the cap number for all files of data.
- * **Security Issues** will be identified by me attempting to hack the system with cross site scripting, and injection attacks. If a vulnerability is found, it will be secured.
- * **Validation Errors** The validation used against user input will need to be checked for errors. To check these errors I will need to type in different types of data that ensures that the inputs only accept valid data. This will be tested by putting data into every input and testing to see if it allows data to get through, there will also be a decision made on if it should get passed through or not so that an error can be identified, If the validation doesn't pick up invalid data, it will need to be fixed

Inputs In The System To Be Tested And Their Related Outputs To Be Observed

* relevant outputs will follow the ' → ' *

↳ Dashboard Page

- ↳ create task form → todays tasks list or the future tasks list
 - ↳ date text field
 - ↳ time text field
 - ↳ subject text field
 - ↳ message text area
- ↳ delete task button for today → todays tasks list
- ↳ delete task button for future → future tasks list

↳ Contacts List Page

- ↳ search bar → contacts list table
- ↳ sort by menu options → contacts list table
- ↳ ascending and descending sort input → contacts list table
- ↳ add contact redirect button → add contact page redirect
- ↳ export contacts button → downloaded csv file of the contacts
- ↳ links on the contacts names → redirect to the contacts page

↳ Individual Contacts Page

- ↳ add notes field → notes table
- ↳ extra notes form → extra notes form
- ↳ edit contact button → redirect to the edit contact page
- ↳ delete contact button → contacts list page redirect (deleted contact not in database)

↪ Add/ edit contacts page

↪ contacts details form —> contacts list page with added/ edited contact in the table

↪ business name text field

↪ first name text field

↪ last name text field

↪ email text field

↪ telephone text field

↪ postcode text field

↪ address text field

↪ contact status drop down menu

↪ Analytics Page

↪ timescale menu —> graphs

↪ daily

↪ weekly

↪ monthly

↪ client gained button —> clients gained graph & conversion rate label

↪ lead lost button —> conversion rate label

↪ client lost button —> clients lost graph

Test Strategy

The test strategy will take a modular approach. The tests will be done in the order presented below. I will also be doing both functional and non-functional testing with the functional testing done first.

Functional Tests

Unit Testing

- * Will be done to identify Logic Errors and Runtime Errors.
- * Done using white box testing methods as it should be done as I am developing so that every module of code is fully working before it gets integrated
- * Unit tests will not be done on every module under every possible case. I will only test cases that directly impact system's behaviour (if a test is obviously pointless as the outcome is blatantly obvious then there will be no need to do it. This will be acceptable as all unit testing will be done under white box testing condition where I will be fully familiar with how the code execution is going to go)
- * Unit tests should be performed separate to the code base used for development (copy & paste code. Make test data, and see how the module handles it)
- * Individual modules of code should be tested to see if they run correctly and how they handle various inputs if they take arguments in the method. Unit testing will first be done on modules of code that don't call any other sub-procedures in the code base.

Integration Testing

- * Will be done to identify Logic Errors and Runtime Errors.
- * This will be done with mainly white box testing however when it is possible to take a black box testing approach, I will do so.
- * After testing all of the methods that don't call any other sub-procedures, I will test the modules of code that only call sub-procedures that are in the same class.
- * Leaving sub-procedures that are created through a method of composition or inheritance (where sub-procedures in one class utilises the code from another class) to last.
- * I will refer to the design document and post prototype refinement of design document to review expected outcomes for the processes where appropriate. The data flow diagrams will be useful for identifying inputs and the outputs I should expect in the higher-order function modules of code which will be built up to form a full process in the system (eg. Adding an array containing an id to a 2d array)

Interface Testing (part of integration testing)

- * Will be done to test for logic errors, run time errors and scaling errors in the higher-order level functions that interface with a separate part of the system. Examples of where I will use interface testing include: text file storing data, databases, apis, etc...
- * This testing will generally be white box testing as I will have to create a separate environment for
- * The tests will be varied to test the functionality of the expected behaviour that the system and interface connection is meant to have.
- * A test interface will be made with high resemblance to the actual interface being used so that the data can be changed to see how the system handles the various changes.

System Testing - alpha testing

- * Will be done to test the overall use of the system and ensure the UI interacts with the functionality correctly, data entered is correctly validated, output messages are appropriately outputted, and generally that all components of the system are working as should be expected.
- * Tests will go through all the functionality the end system has and test to see if it works with typical, extreme and erroneous data. The validation of the system in selected parts will also get tested.
- * Will follow a black box method of testing.

Acceptance Testing - alpha testing

- * Will be done to test the system meets the requirements of the users as specified in the objectives and
- * The success of the objective being met will be dependent on the success criteria for that objective.
- * If the system does not meet the success criteria of any objectives, an attempt will be made to do so if it is feasible to do so with time remaining to complete the project.

User Testing - beta testing

- * Will be done to test the system is appropriate for the user and how they need it to be.
- * Done by giving the users a chance to use the system with a list of things relevant to their objectives they should test out.
- * Feedback from the user based around the questionnaire and anything else they want to bring up about the system will be used to refine the system further if needed

Non-Functional Tests

Security Testing

- * Will be done to test the system is more secure so that the users of the system are less likely to have their data compromised.

- * Done by trying to comprise the system with cross site scripting attacks in text fields that get sent via post requests or put requests.
- * The cross site scripting will be preformed using “ <script>alert()</script> ” in the text fields that will be posted. This script will bring up an alert dialog if the post request is susceptible to a cross site scripting attack.
- * To fix this issue, the data going into the text file will need to get sanitised before it is posted.

Scalability Testing

- * Will be done to test the system is still able to work even when the amount of data needing to be processed is significantly increased
- * Tested by increasing the amount of data stored in a certain table/file of the database and observing if the system works as expected or not.

Structure Of The Testing Document

For **unit testing** and **integration testing**, the documentation for each test will be as follows:

- * Description of what the module is meant to do with the parameters that are expected and the type them parameters are expected to be.
- * There will then be a screenshot of the module of code that is going to be tested.
- * Each test done on that module of code will then be presented below with a description of the test, a screenshot of the test data if any, the expected outcome if there is one, and a screenshot of the actual output
- * If the test was not that of the expected output or it caused a problem such as it crashed. I will need to identify the problem, describe the problem, show the amendment to the code in a screenshot and then show the evidence of the code working

For the **interface testing**, the documentation for each test will be as follows:

- * Description of the test being preformed and the data that is going to be used in the test

- * A description of the expected output
- * There will be a screenshot of the code before the test, along with a suitable view of the interface being tested.
- * There will then also be a description of what the output was
- * A suitable view of the outcome of the test (proof)
- * if the outcome does not match the expected outcome, there will then need to be a description of the problem and proof of the solution that fixes the error

For the **system testing**, the documentation for each test will be as follows:

- * Description of the test that will be preformed and the expected outcome of the test
- * Screenshots of the UI though the various processes that the test will incur and description with each on what happened
- * A comment will then be made on the process outcomes and if the expected outcome was met.
- * If the expected outcome was not met, then there will be a description of the problem along with proof of a solution and proof of the system working as expected.

For the **acceptance testing**, the documentation for each test will be as follows:

- * The objective and success criteria should be stated (go through them all in a list)
- * Then the description of the test (if necessary) to prove that the success criteria has been met
- * Proof of the test being conducted or proof that the objective has been met.
- * A comment on if the test was successful or not with proof
- * If not successful, there should be a description of the problem and a solution to fix it
- * The issue should get resolved and there should be proof of the objective being met

For the **user testing**, the documentation for each test will be as follows:

- * There should be a document of all the things I will want the user to test relating to the objectives.
- * Feedback should be received from the user and adjustments should be made from the users feedback

For the **security testing**, the documentation for each test will be as follows:

- * There will need to a description of the test and an expected outcome
- * Proof of the stages the system went through
- * Comment on if the expected outcome was met or not
- * If the expected outcome was not met then there will be a description of the problem
- * A solution will be described
- * Proof of a solution working

For the **scalability testing**, the documentation for each test will be as follows:

- * There will need to a description of the test and an expected outcome
- * Proof of the large data set
- * Comment on if the expected outcome was met or not
- * If the expected outcome was not met then there will be a description of the problem
- * A solution will be described
- * Proof of a solution working

The Tests

The Tests Will often be called in a ‘console.log(...’ statement at the bottom of the screenshot with the method being tested inside the console.log parameters and the values being tested will be inside the method’s parameters.

Unit Testing

Sort Class

comparisonOperator — used to make comparisons with ‘<’ or ‘>’ symbols in parameters

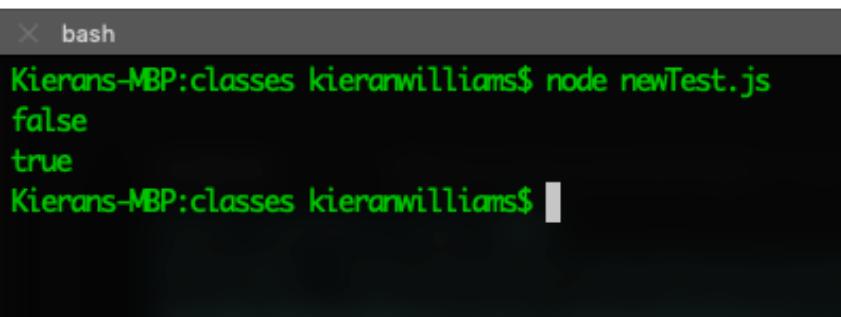
Test	* value other than ‘<’ or ‘>’ in the comparisonOp parameter (erroneous) with typical value1 and value2 parameters. There should be an error message thrown due to the incorrect use of the paramaters.
The Test Code with the test data “a” where ‘<’ or ‘>’ should be. And two valid inputs in the other two parameters	<pre>x vim 1 _comparissonOperator = (comparisonOp, value1, value2) => { 2 if(comparisonOp == "<"){ return value1 < value2 } 3 if(comparisonOp == ">"){ return value1 > value2 } 4 }; 5 6 console.log(_comparissonOperator("a", 2, 4)); 7 8 9 ~</pre>
Code execution	<pre>Kierans-MBP:classes kieranwilliams\$ node newTest.js undefined Kierans-MBP:classes kieranwilliams\$</pre>
Pass/ Fail	Fail

There needs to be an error thrown if the first parameter does not contain ‘>’ or ‘<’

```
x vim
1 _comparisonOperator = (comparisonOp, value1, value2) => {
2
3   if (comparisonOp != '>' || comparisonOp != '<'){
4     throw `comparisonOp parameter must only be '<' or '>', you entered ${comparisonOp}`
5   }
6
7   if(comparisonOp == "<"){ return value1 < value2 }
8   if(comparisonOp == ">"){ return value1 > value2 }
9 };
10
11 console.log(_comparisonOperator("a", 2, 4));
12
13
14
~
```

New execution	<pre>Kieran-MBP:classes kieranwilliams\$ node newTest.js /Users/kieranwilliams/Desktop/uploaded working backup copy/programming/kwcmCourseworkProject/classes/newTest.js:4 throw `comaprisonOp parameter must only be '<' or '>', you entered \${comparisonOp}` ^ comaprisonOp parameter must only be '<' or '>', you entered a Kieran-MBP:classes kieranwilliams\$</pre>
Pass/ Fail	Pass

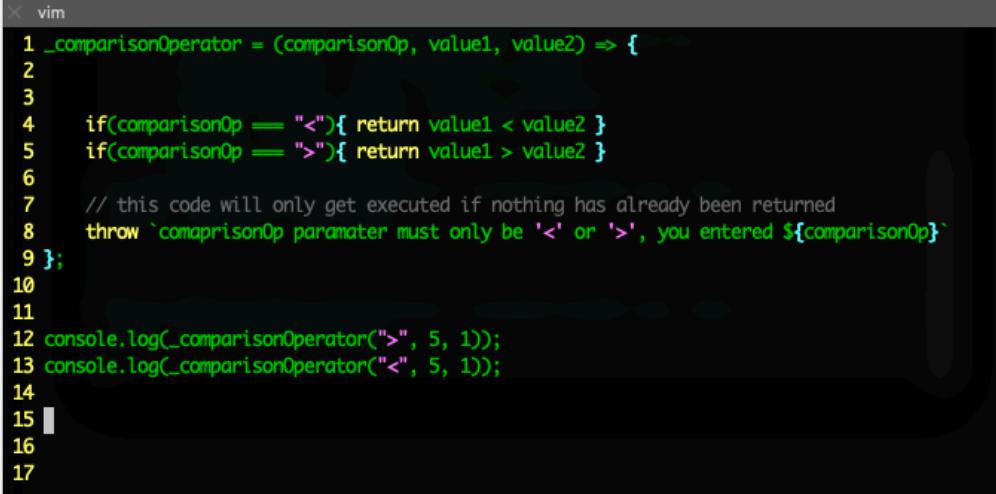
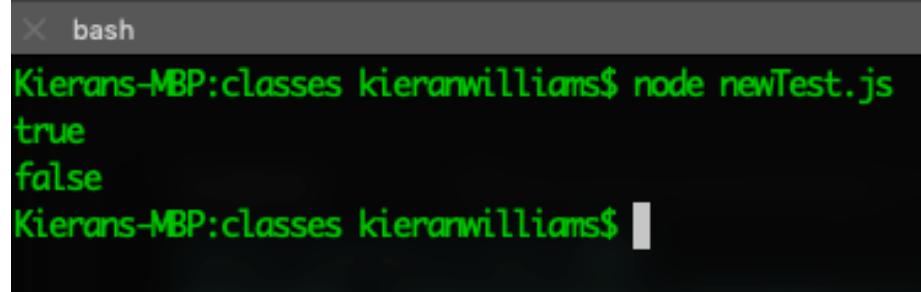
Test	<ul style="list-style-type: none"> * typical data in value1 and typical data in value 2 (“abc” and “cba”) test done with both comparison operators. The > comparison should return false, The < comparison should return true.
The Test Code	<pre>x vim 1 _comparisonOperator = (comparisonOp, value1, value2) => { 2 3 4 if (comparisonOp != '>' comparisonOp != '<'){ 5 throw `comaprisonOp parameter must only be '<' or '>', you entered \${comparisonOp}` 6 } 7 8 if(comparisonOp == "<"){ return value1 < value2 } 9 if(comparisonOp == ">"){ return value1 > value2 } 10 }; 11 12 13 console.log(_comparisonOperator(">", "abc", "cba")); 14 console.log(_comparisonOperator("<", "abc", "cba")); 15 16</pre>
Code execution	<pre>Kieran-MBP:classes kieranwilliams\$ node newTest.js false /Users/kieranwilliams/Desktop/uploaded working backup copy/programming/kwcmCourseworkProject/classes/newTest.js:6 throw `comaprisonOp parameter must only be '<' or '>', you entered \${comparisonOp}` ^ comaprisonOp parameter must only be '<' or '>', you entered > Kieran-MBP:classes kieranwilliams\$</pre>
Pass/ Fail	Fail
By putting the if statement that throws the error after the < and > checks, the code should execute correctly	<pre>x vim 1 _comparisonOperator = (comparisonOp, value1, value2) => { 2 3 4 if(comparisonOp == "<"){ return value1 < value2 } 5 if(comparisonOp == ">"){ return value1 > value2 } 6 7 // this code will only get executed if nothing has already been returned 8 throw `comaprisonOp parameter must only be '<' or '>', you entered \${comparisonOp}` 9 }; 10 11 12 console.log(_comparisonOperator(">", "abc", "cba")); 13 console.log(_comparisonOperator("<", "abc", "cba")); 14 15 16</pre>

New execution	
Pass/ Fail	Pass

```

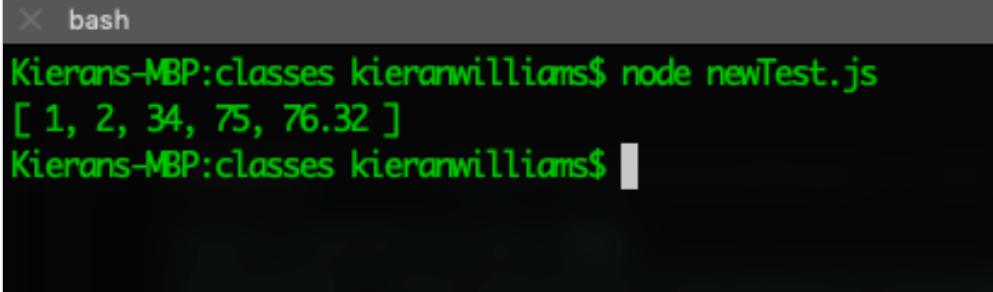
14 bubbleSort = (array, ascending) => {
15
16
17
18
19     let n = array.length;
20     let sorted = false;
21     let temp = 0;
22     let comparisonOp = "";
23
24     if (ascending) comparisonOp = ">";
25     if (!ascending) comparisonOp = "<";
26
27     while(!sorted){
28
29         sorted = true;
30         for(let i = 0; i < n; i++){
31
32             // if(array[i] > array[i+1]) is for ascending
33
34             // uses the comparisonOperator method to make this
35             // method dynamic in sorting both ascending and descending
36             if (_comparisonOperator(comparisonOp,
37                 array[i], array[i+1])) {
38
39                 temp = array[i];
40                 array[i] = array[i+1];
41                 array[i+1] = temp;
42                 sorted = false;
43             }
44         }
45     }
46
47     return array;
48 };
49
50 console.log(bubbleSort([1,2,34,76,32,75], true));

```

Test	* typical data in value1 and typical data in value 2 (5 and 1) test done with both comparison operators. The > comparison should return true, The < comparison should return false.
The Test Code	 <pre>vim 1 _comparisonOperator = (comparisonOp, value1, value2) => { 2 3 4 if(comparisonOp === "<"){ return value1 < value2 } 5 if(comparisonOp === ">"){ return value1 > value2 } 6 7 // this code will only get executed if nothing has already been returned 8 throw `comaprisonOp parameter must only be '<' or '>', you entered \${comparisonOp}` 9 }; 10 11 12 console.log(_comparisonOperator(">", 5, 1)); 13 console.log(_comparisonOperator("<", 5, 1)); 14 15 16 17</pre>
Code execution	 <pre>bash Kierans-MBP:classes kieranwilliams\$ node newTest.js true false Kierans-MBP:classes kieranwilliams\$</pre>
Pass/ Fail	Pass

bubbleSort — used to sort an inputted 1 dimensional array and output the array sorted in ascending or descending

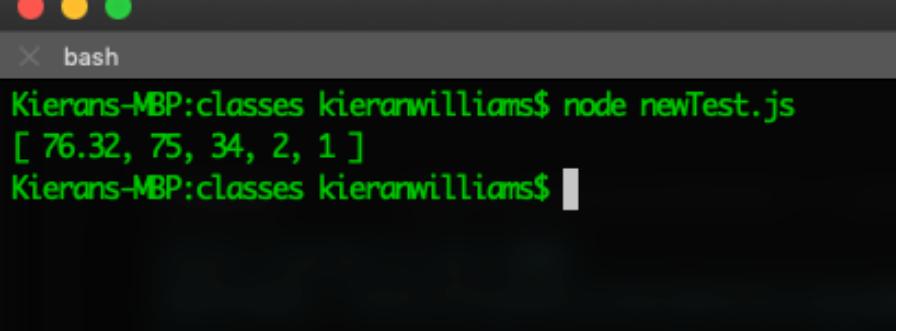
Test	* Test with a typical array in first parameter and ‘ascending’ parameter set to true. The function should return a sorted array in ascending order
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The Test Code	<pre> 14 bubbleSort = (array, ascending) => { 15 16 17 18 19 let n = array.length; 20 let sorted = false; 21 let temp = 0; 22 let comparisonOp = ""; 23 24 if (ascending) comparisonOp = ">"; 25 if (!ascending) comparisonOp = "<"; 26 27 while(!sorted){ 28 29 sorted = true; 30 for(let i = 0; i < n; i){ 31 32 // if(array[i] > array[i+1]) is for ascending 33 34 // uses the comparisonOperator method to make this 35 // method dynamic in sorting both ascending and descending 36 if (_comparisonOperator(comparisonOp, 37 array[i], array[i+1])) { 38 39 temp = array[i]; 40 array[i] = array[i+1]; 41 array[i+1] = temp; 42 sorted = false; 43 } 44 } 45 } 46 47 return array; 48 }; 49 50 console.log(bubbleSort([1,2,34,76.32,75], true)); </pre>
Code execution	 <pre> Kierans-MBP:classes kieranwilliams\$ node newTest.js [1, 2, 34, 75, 76.32] Kierans-MBP:classes kieranwilliams\$ </pre>
Pass/ Fail	Pass

Test	* Test with a typical array in first parameter and 'ascending' parameter set to false. The function should return a sorted array in descending order
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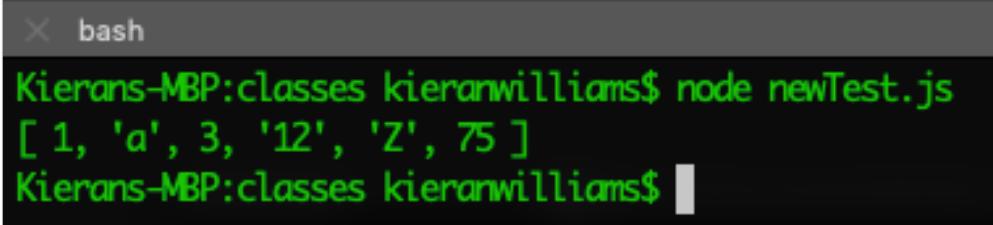
The Test Code	<pre> 14 bubbleSort = (array, ascending) => { 15 16 17 18 19 let n = array.length; 20 let sorted = false; 21 let temp = 0; 22 let comparisonOp = ""; 23 24 if (ascending) comparisonOp = ">"; 25 if (!ascending) comparisonOp = "<"; 26 27 while(!sorted){ 28 29 sorted = true; 30 for(let i = 0; i < n; i){ 31 32 // if(array[i] > array[i+1]) is for ascending 33 34 // uses the comparisonOperator method to make this 35 // method dynamic in sorting both ascending and descending 36 if (_comparisonOperator(comparisonOp, 37 array[i], array[i+1])) { 38 39 temp = array[i]; 40 array[i] = array[i+1]; 41 array[i+1] = temp; 42 sorted = false; 43 } 44 } 45 } 46 47 return array; 48 }; 49 50 console.log(bubbleSort([1,2,34,76,32,75], false)); </pre>
Code execution	<pre> Kieran-MBP:classes kieranwilliams\$ node newTest.js [76.32, 75, 34, 2, 1] Kieran-MBP:classes kieranwilliams\$ </pre>
Pass/ Fail	Pass

Test	* Test with a typical array in first parameter and ‘ascending’ parameter with no value. It should handle it by doing the sort in ascending order
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The Test Code	<pre> 14 bubbleSort = (array, ascending) => { 15 16 17 18 19 let n = array.length; 20 let sorted = false; 21 let temp = 0; 22 let comparisonOp = ""; 23 24 if (ascending) comparisonOp = ">"; 25 if (!ascending) comparisonOp = "<"; 26 27 while(!sorted){ 28 29 sorted = true; 30 for(let i = 0; i < n; i){ 31 32 // if(array[i] > array[i+1]) is for ascending 33 34 // uses the comparisonOperator method to make this 35 // method dynamic in sorting both ascending and descending 36 if (_comparisonOperator(comparisonOp, 37 array[i], array[i+1])) { 38 39 temp = array[i]; 40 array[i] = array[i+1]; 41 array[i+1] = temp; 42 sorted = false; 43 } 44 } 45 } 46 47 return array; 48 }; 49 50 console.log(bubbleSort([1,2,34,76.32,75])); -- INSERT -- </pre>
Code execution (it sorts in descending order but ascending order is the order needed for my binary search algorithm so it makes sense to make the default ascending order)	 <pre> bash Kieran-MBP:classes kieranwilliams\$ node newTest.js [76.32, 75, 34, 2, 1] Kieran-MBP:classes kieranwilliams\$ </pre>
Pass/ Fail	Fail

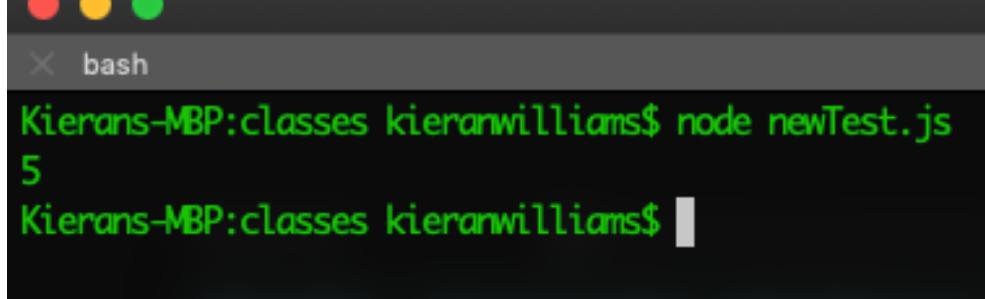
Revised code	<pre>x vim 11 // or false, and returns the sorted array 12 // THE ASCENDING PARAMETER COULD BE CONSIDERED POLYMORPHISM AS THE METHODS FU 13 // WHETHER THE ARGUMENT PASSED SETS IT TO FALSE OR IS LEFT ALONE/ SET TO TRUE 14 bubbleSort = (array, ascending) => { 15 16 if (ascending === undefined) ascending = true; 17 // if no ascending argument is passed, method sorts array in ascending or 18 19 let n = array.length; 20 let sorted = false; 21 let temp = 0; 22 let comparisonOp = ""; 23 24 if (ascending) comparisonOp = ">"; 25 if (!ascending) comparisonOp = "<"; 26 27 while(!sorted){ 28 29 sorted = true; 30 for(let i = 0; i < n; i){ 31 32 // if(array[i] > array[i+1]) is for ascending 33 34 // uses the comparisonOperator method to make this 35 // method dynamic in sorting both ascending and descending 36 if (_comparisonOperator(comparisonOp, 37 array[i], array[i+1])) { 38 39 temp = array[i]; 40 array[i] = array[i+1]; 41 array[i+1] = temp; 42 sorted = false; 43 } 44 } 45 } 46 47 return array; 48 }; 49 50 console.log(bubbleSort([1,2,34,76.32,75])); "newTest.js" 50L, 1588C written</pre>
Code execution	<pre>x bash Kieran-MBP:classes kieranwilliams\$ node newTest.js [1, 2, 34, 75, 76.32] Kieran-MBP:classes kieranwilliams\$</pre>
Pass/ Fail	Pass

Test	* Test with an array of characters and numbers (a list of different types) (erroneous) in first parameter and ‘ascending’ parameter set to true. The system should attempt to sort the list by turning the characters into their UTF character codes and sorting via them numbers
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The Test Code	<pre> 14 bubbleSort = (array, ascending) => { 15 16 if (ascending === undefined) ascending = true; 17 // if no ascending argument is passed, method sorts array in ascending order 18 19 let n = array.length; 20 let sorted = false; 21 let temp = 0; 22 let comparisonOp = ""; 23 24 if (ascending) comparisonOp = ">"; 25 if (!ascending) comparisonOp = "<"; 26 27 while(!sorted){ 28 29 sorted = true; 30 for(let i = 0; i < n; i++){ 31 32 // if(array[i] > array[i+1]) is for ascending 33 34 // uses the comparisonOperator method to make this 35 // method dynamic in sorting both ascending and descending 36 if (_comparisonOperator(comparisonOp, 37 array[i], array[i+1])) { 38 39 temp = array[i]; 40 array[i] = array[i+1]; 41 array[i+1] = temp; 42 sorted = false; 43 } 44 } 45 } 46 47 return array; 48 }; 49 50 console.log(bubbleSort([1,"a",3,"Z", "12" ,75])); "newTest.js" 50L, 1594C written </pre>
Code execution	 <pre> × bash Kieran-MBP:classes kieranwilliams\$ node newTest.js [1, 'a', 3, '12', 'Z', 75] Kieran-MBP:classes kieranwilliams\$ </pre>
Pass/ Fail	Pass

Search Class

binarySearch — used to search for a value in a 1 dimensional array and return an index for where the value can be found (only works on a sorted array)

Test	* Test to see if it works with an array that is sorted and with a search value that is in the middle of the array (typical). The correct index that the search value is found at should get returned
The Test Code	<pre>x vim 1 // searches for a value and returns the index the element was found at 2 // or returns -1 if the search value was not found in the array 3 // ONLY WORKS ON SORTED ARRAYS 4 binarySearch = (array, searchValue) => { 5 // makes sure that the array is sorted before the search is done 6 let first = 0; 7 let last = array.length; 8 let middle = Math.floor((first + last)/2); 9 let found = false; 10 while((!found) (first <= last)){ 11 if(array[middle] === searchValue){ 12 found = true; 13 return middle; 14 } 15 if(searchValue < array[middle]){ 16 last = middle - 1; 17 middle = Math.floor((first + last)/2); 18 } 19 if(searchValue > array[middle]){ 20 first = middle + 1; 21 middle = Math.floor((first + last)/2); 22 } 23 } 24 return -1; 25 }; 26 27 console.log(binarySearch([1,2,3,4,5,6,7,8,9,10], 6)) 28</pre>
Code execution	 <pre>Kierans-MBP:classes kieranwilliams\$ node newTest.js 5 Kierans-MBP:classes kieranwilliams\$</pre>
Pass/ Fail	Pass

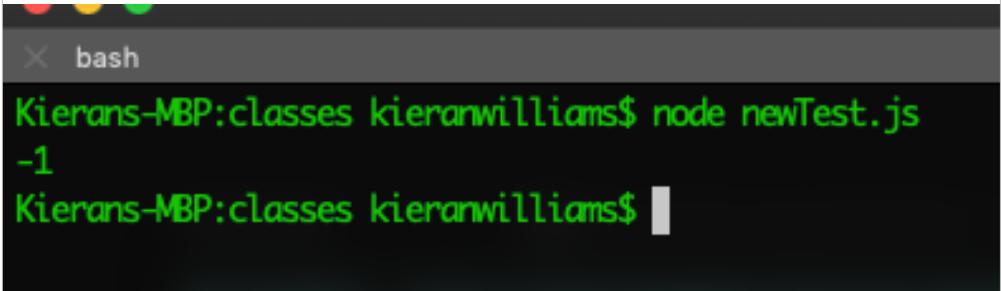
Test	* Test to see if it finds a search value that is in the 0th index
------	---

The Test Code	<pre> 1 // searches for a value and returns the index the element was found at 2 // or returns -1 if the search value was not found in the array 3 // ONLY WORKS ON SORTED ARRAYS 4 binarySearch = (array, searchValue) => { 5 // makes sure that the array is sorted before the search is done 6 let first = 0; 7 let last = array.length; 8 let middle = Math.floor((first + last)/2); 9 let found = false; 10 while((!found) (first <= last)){ 11 if(array[middle] === searchValue){ 12 found = true; 13 return middle; 14 } 15 if(searchValue < array[middle]){ 16 last = middle - 1; 17 middle = Math.floor((first + last)/2); 18 } 19 if(searchValue > array[middle]){ 20 first = middle + 1; 21 middle = Math.floor((first + last)/2); 22 } 23 } 24 return -1; 25 }; 26 27 console.log(binarySearch([1,2,3,4,5,6,7,8,9,10], 1)) 28 </pre>
Code execution	<pre> Kieran-MBP:classes kieranwilliams\$ node newTest.js 0 Kieran-MBP:classes kieranwilliams\$ </pre>
Pass/ Fail	Pass

Test	* Test to see if it finds a search value that is in the arrays length-1 index
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The Test Code	<pre><code>vim 1 // searches for a value and returns the index the element was found at 2 // or returns -1 if the search value was not found in the array 3 // ONLY WORKS ON SORTED ARRAYS 4 binarySearch = (array, searchValue) => { 5 // makes sure that the array is sorted before the search is done 6 let first = 0; 7 let last = array.length; 8 let middle = Math.floor((first + last)/2); 9 let found = false; 10 while((!found) (first <= last)){ 11 if(array[middle] === searchValue){ 12 found = true; 13 return middle; 14 } 15 if(searchValue < array[middle]){ 16 last = middle - 1; 17 middle = Math.floor((first + last)/2); 18 } 19 if(searchValue > array[middle]){ 20 first = middle + 1; 21 middle = Math.floor((first + last)/2); 22 } 23 } 24 return -1; 25 }; 26 27 console.log(binarySearch([1,2,3,4,5,6,7,8,9,10], 10)) 28 </code></pre>
Code execution	<pre>Kieran-MBP:classes kieranwilliams\$ node newTest.js 9 Kieran-MBP:classes kieranwilliams\$ </pre>
Pass/ Fail	Pass

Test	* Test to see how it handles a search value that is not in the array
------	--

The Test Code	<pre> 1 // searches for a value and returns the index the element was found at 2 // or returns -1 if the search value was not found in the array 3 // ONLY WORKS ON SORTED ARRAYS 4 binarySearch = (array, searchValue) => { 5 // makes sure that the array is sorted before the search is done 6 let first = 0; 7 let last = array.length; 8 let middle = Math.floor((first + last)/2); 9 let found = false; 10 while((!found) (first <= last)){ 11 if(array[middle] === searchValue){ 12 found = true; 13 return middle; 14 } 15 if(searchValue < array[middle]){ 16 last = middle - 1; 17 middle = Math.floor((first + last)/2); 18 } 19 if(searchValue > array[middle]){ 20 first = middle + 1; 21 middle = Math.floor((first + last)/2); 22 } 23 } 24 return -1; 25 }; 26 27 console.log(binarySearch([1,2,3,4,5,6,7,8,9,10], 12)) 28 </pre>
Code execution	 <pre> Kierans-MBP:classes kieranwilliams\$ node newTest.js -1 Kierans-MBP:classes kieranwilliams\$ </pre>
Pass/ Fail	Pass

checkBoundsForMatches — searches for multiple matches in a sorted by 2D array by a search value in a certain column, returns the records containing the match other than the one it started on.

Test	* Test to see if it returns all the other matches in the 2D array when there are multiple matches next to it either side of it. (typical) It should return all the matches either side but not the already found match
------	--

The Test
Code

```

vim
1 _checkBoundsForMatches = (array, middle, col, searchValue) => {
2     let matchAtBoundsFoundFlag = true; // set to true so that the loop will start
3     let recordsFound = [];
4     let upperBounds = middle;
5     let lowerBounds = middle;
6
7     // the algorithm works in the binary search as any other matches will be found either side of the initial match
8     // due to a binary search only working on sorted arrays which will result in the matches in conjunction in the array
9
10    // loop through upper values
11    while (matchAtBoundsFoundFlag === true){
12
13        // set to false so that if no matches are found on the upper bounds from the first match
14        // the loop will end.
15        matchAtBoundsFoundFlag = false;
16
17        // checks that if the upperBounds was to get increased by one,
18        // the program will not crash due to the record not being in the bounds of the array
19        if ((upperBounds + 1) > (array.length - 1)) {
20            break; // terminate the loop
21        }
22
23        if (array[upperBounds + 1][col] === searchValue) { // checks to see if the array element above is a match to the search value
24            matchAtBoundsFoundFlag = true; // set back to true so that the loop will run again to check for more matches.
25            upperBounds++; // increase value stored in upperBounds variable by 1
26
27            // match to the search value was found so the recordsFound
28            // array gets the record and index of record in a javascript object appended to the end of it
29            recordsFound.push({ record : array[upperBounds], index : upperBounds });
30        }
31    }
32
33    matchAtBoundsFoundFlag = true; // reset the flag value so the next loop can run
34
35    // loop through lower values
36    while (matchAtBoundsFoundFlag === true){
37
38        // set to false so that if no matches are found on the lower bounds of the first match
39        // the loop will end.
40        matchAtBoundsFoundFlag = false;
41
42        // checks that if the lowerBounds was to get decreased by one,
43        // the program will not crash due to the record not being in the bounds of the array
44        if ((lowerBounds - 1) < 0) {
45            break; // terminate the loop
46        }
47
48        if (array[lowerBounds - 1][col] === searchValue) {
49            matchAtBoundsFoundFlag = true; // set back to true so that the loop will run again to check for more matches.
50            lowerBounds--; // increase value stored in lowerBounds variable by 1
51
52            // match to the search value was found so the recordsFound
53            // array gets the record and index of record in a javascript object appended to the end of it
54            recordsFound.push({ record : array[lowerBounds], index : lowerBounds });
55        }
56    }
57
58    return recordsFound;
59}
60

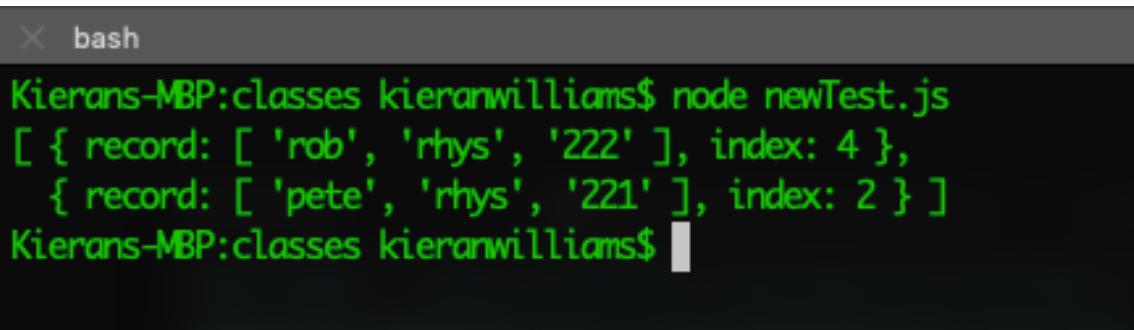
```

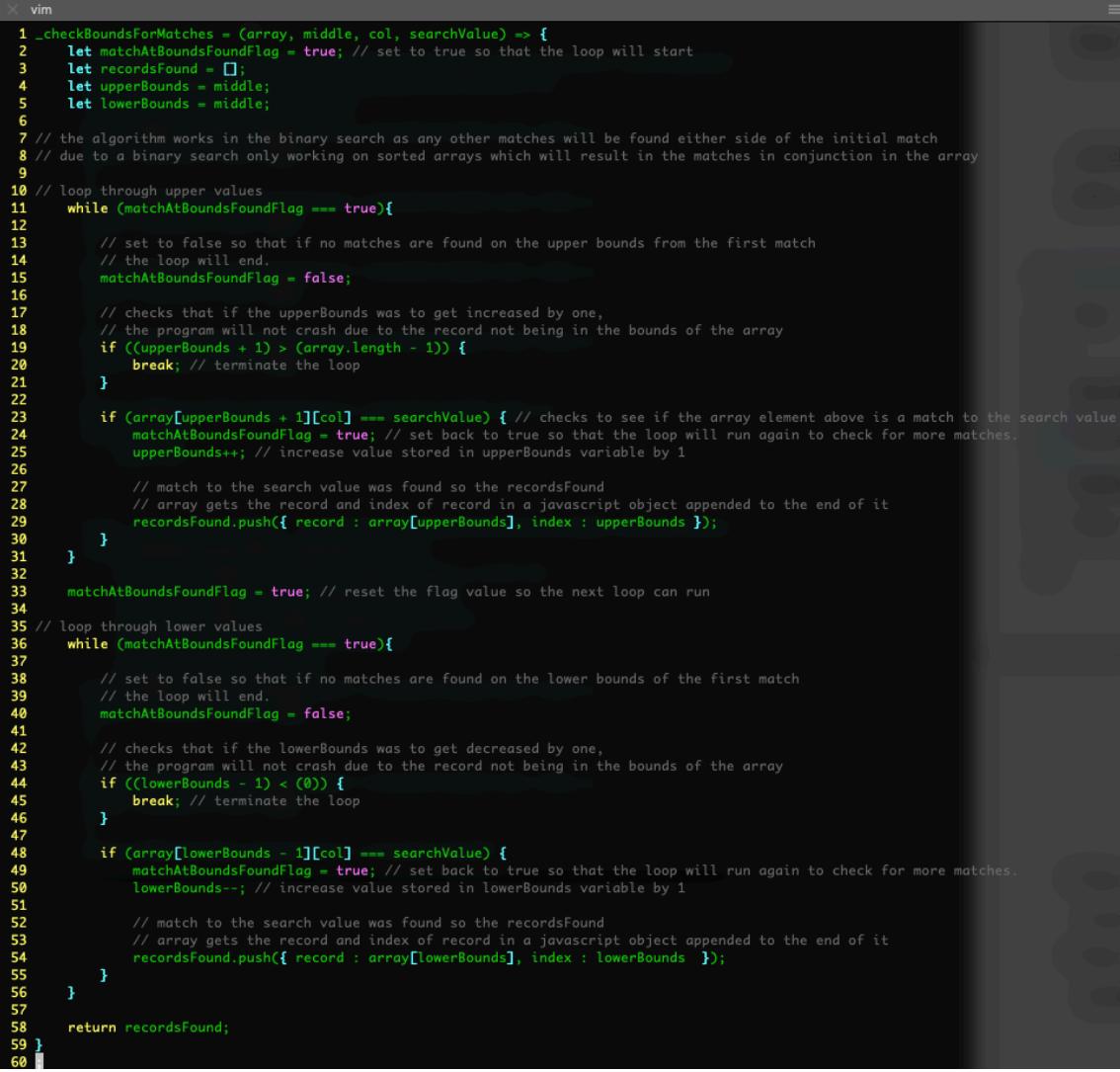
The test
data

```

60
61
62 let array2D =
63   [['kieran', 'alex', '501'],
64   ['john', 'bevan', '400'],
65   ['pete', 'rhys', '221'],
66   ['steven', 'rhys', '593'],
67   ['rob', 'rhys', '222'],
68   ['alex', 'williams', '502']];
69
70 console.log(_checkBoundsForMatches(array2D,3, 1, 'rhys'));
71
72
73
-- INSERT --

```

Code execution	
Pass/ Fail	Pass

Test	* Test to see if it returns all the other matches in the 2D array when there are other matches next to it on only one side of it. (extreme) it should return only one match
The Test Code	

The test data	<pre> 60 61 62 let array2D = 63 [['kieran', 'alex', '501'], 64 ['john', 'bevan', '400'], 65 ['steven', 'rhys', '593'], 66 ['rob', 'rhys', '222'], 67 ['alex', 'williams', '502']]; 68 69 console.log(_checkBoundsForMatches(array2D, 3, 1, 'rhys')); 70 71 72 "newTest.js" 73L, 2999C written </pre>
Code execution	<pre> X bash Kierans-MBP:classes kieranwilliams\$ node newTest.js [{ record: ['steven', 'rhys', '593'], index: 2 }] Kierans-MBP:classes kieranwilliams\$ </pre>
Pass/ Fail	Pass

Test	* Test to see if it returns no matches in the 2D array when there are no matches next to it. (erroneous) should return an empty array
------	---

The Test
Code

```

1 _checkBoundsForMatches = (array, middle, col, searchValue) => {
2     let matchAtBoundsFoundFlag = true; // set to true so that the loop will start
3     let recordsFound = [];
4     let upperBounds = middle;
5     let lowerBounds = middle;
6
7     // the algorithm works in the binary search as any other matches will be found either side of the initial match
8     // due to a binary search only working on sorted arrays which will result in the matches in conjunction in the array
9
10    // loop through upper values
11    while (matchAtBoundsFoundFlag === true){
12
13        // set to false so that if no matches are found on the upper bounds from the first match
14        // the loop will end.
15        matchAtBoundsFoundFlag = false;
16
17        // checks that if the upperBounds was to get increased by one,
18        // the program will not crash due to the record not being in the bounds of the array
19        if ((upperBounds + 1) > (array.length - 1)) {
20            break; // terminate the loop
21        }
22
23        if (array[upperBounds + 1][col] === searchValue) { // checks to see if the array element above is a match to the search value
24            matchAtBoundsFoundFlag = true; // set back to true so that the loop will run again to check for more matches.
25            upperBounds++; // increase value stored in upperBounds variable by 1
26
27            // match to the search value was found so the recordsFound
28            // array gets the record and index of record in a javascript object appended to the end of it
29            recordsFound.push({ record : array[upperBounds], index : upperBounds });
30        }
31    }
32
33    matchAtBoundsFoundFlag = true; // reset the flag value so the next loop can run
34
35    // loop through lower values
36    while (matchAtBoundsFoundFlag === true){
37
38        // set to false so that if no matches are found on the lower bounds of the first match
39        // the loop will end.
40        matchAtBoundsFoundFlag = false;
41
42        // checks that if the lowerBounds was to get decreased by one,
43        // the program will not crash due to the record not being in the bounds of the array
44        if ((lowerBounds - 1) < (0)) {
45            break; // terminate the loop
46        }
47
48        if (array[lowerBounds - 1][col] === searchValue) {
49            matchAtBoundsFoundFlag = true; // set back to true so that the loop will run again to check for more matches.
50            lowerBounds--; // increase value stored in lowerBounds variable by 1
51
52            // match to the search value was found so the recordsFound
53            // array gets the record and index of record in a javascript object appended to the end of it
54            recordsFound.push({ record : array[lowerBounds], index : lowerBounds });
55        }
56    }
57
58    return recordsFound;
59}
60

```

The test
data

```

60
61
62 let array2D =
63   [['kieran', 'alex', '501'],
64   ['john', 'bevan', '400'],
65   ['steven', 'rhys', '593'],
66   ['rob', 'rhys', '222'],
67   ['alex', 'williams', '502']];
68
69 console.log(_checkBoundsForMatches(array2D,3, 1, 'alys'));
70

```

Code
execution

```

× bash
Kieran-MBP:classes kieranwilliams$ node newTest.js
□
Kieran-MBP:classes kieranwilliams$ []

```

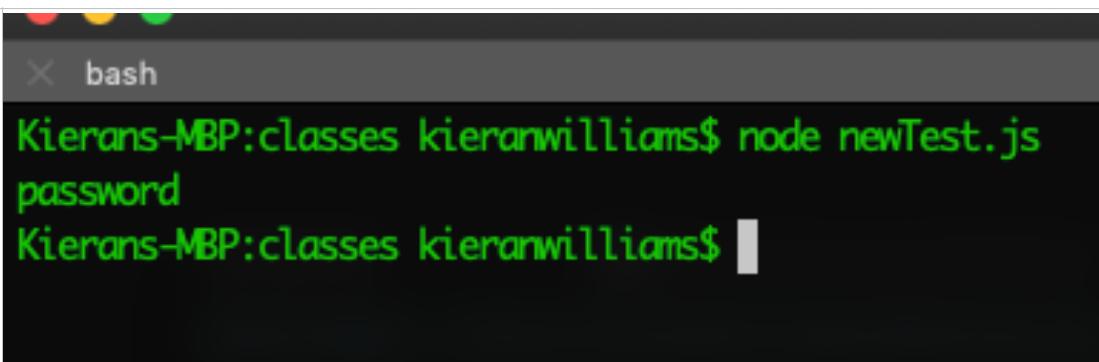
Encryption Class

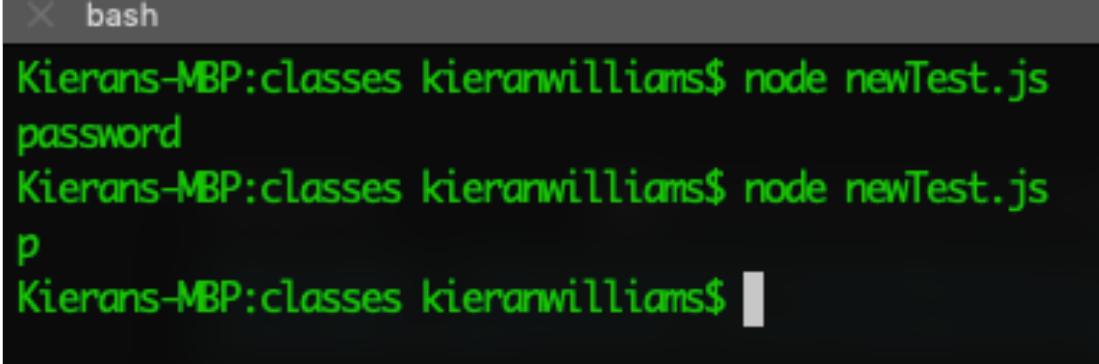
generateKey — used to make a key (piece of text) the same length as another piece of text, and returning that new key

Test	* Test to see if the length of the key outputted is equal to the other inputted text when the key is less characters than the other inputted text but greater than 1 character (typical) the output should be a string of the characters
The Test Code	<pre>Kieran-MBP:classes kieranwilliams\$ vim vim: Vim - Vi IMproved - version 8.0 +features X vim 1 _generateKey = (key, inputLength) => { 2 let keyArray; // used to store key / password as an array of characters 3 let difference; 4 5 // loop to make the key longer or equal to the length of the input text 6 while (key.length <= inputLength) { 7 key = key + key + "p"; 8 } 9 keyArray = key.split(""); 10 11 // stores how much longer the length of the key is to the input 12 difference = keyArray.length - inputLength; 13 14 // loop to get rid of last element in the array 15 // each time to make length of keyArray == inputArray 16 for (let i = 0; i < difference; i++){ 17 keyArray.pop(); 18 } 19 return keyArray.join(''); 20 }; 21 22 23 console.log(_generateKey("password", 100)); ~</pre>
Code execution (all the characters got outputted)	<pre>Kieran-MBP:classes kieranwilliams\$ node newTest.js passwordpasswordppasswordpasswordpppasswordpasswordpppasswordpasswordpppasswordpass Kieran-MBP:classes kieranwilliams\$</pre>

Proof that it is 100 characters (the length specified in the parameters)	<p>Write or paste your text into this online character counter:</p> <div style="border: 1px solid #ccc; padding: 10px; min-height: 100px;"> passwordpasswordppasswordpasswordpppasswordpasswordpppasswordpasswordpppasswordpasswordpppasswordpass </div> <div style="text-align: center; margin-top: 10px;"> Count characters Reset 100 </div>
Pass/ Fail	Pass

Test	* Test to see if the length of the key outputted is equal to the other inputted text when the key is the same number of characters as the other inputted text (extreme)
The Test Code	<pre style="background-color: black; color: green; font-family: monospace; padding: 10px;"> × vim 1 _generateKey = (key, inputLength) => { 2 let keyArray; // used to store key / password as an array of characters 3 let difference; 4 5 // loop to make the key longer or equal to the length of the input text 6 while (key.length <= inputLength) { 7 key = key + key + "p"; 8 } 9 keyArray = key.split(""); 10 11 // stores how much longer the length of the key is to the input 12 difference = keyArray.length - inputLength; 13 14 // loop to get rid of last element in the array 15 // each time to make length of keyArray == inputArray 16 for (let i = 0; i < difference; i++){ 17 keyArray.pop(); 18 } 19 return keyArray.join(''); 20 }; 21 22 23 console.log(_generateKey("password", 8)); ~</pre>

Code execution (all the characters got outputted)	
Pass/ Fail	Pass

Test	* Test to see if the length of the key returned is equal to the other inputed text when the key is inputted with only one character (extreme) Only one character (the first character) should get returned
The Test Code	
Code execution	

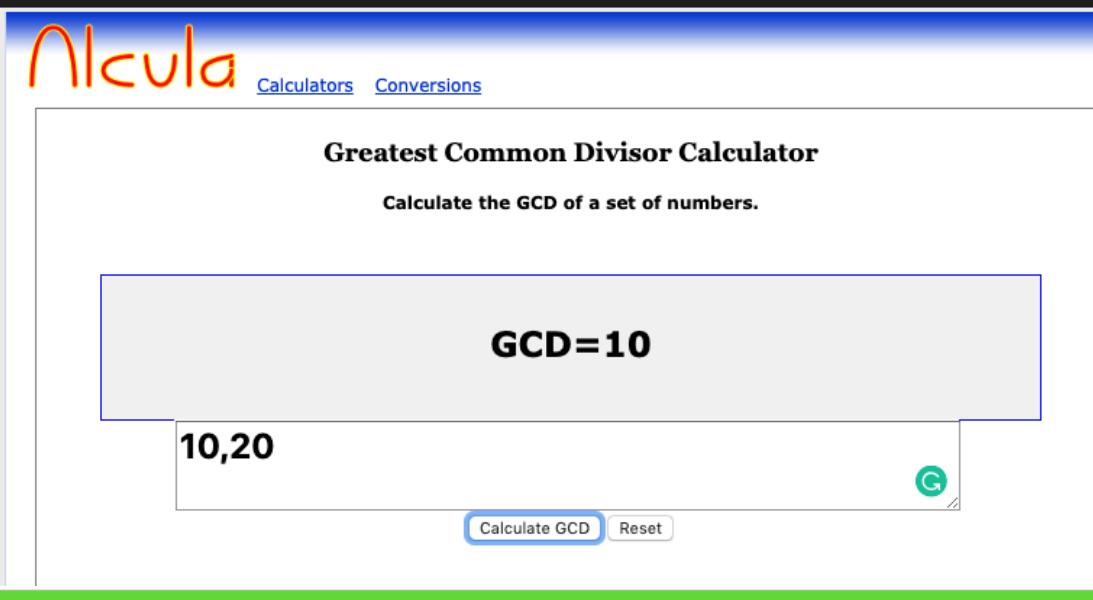
Pass/ Fail

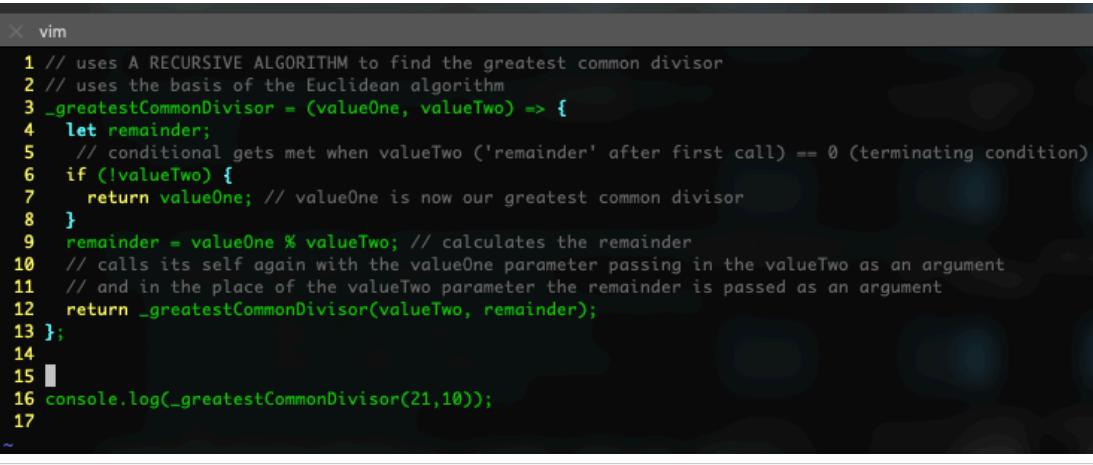
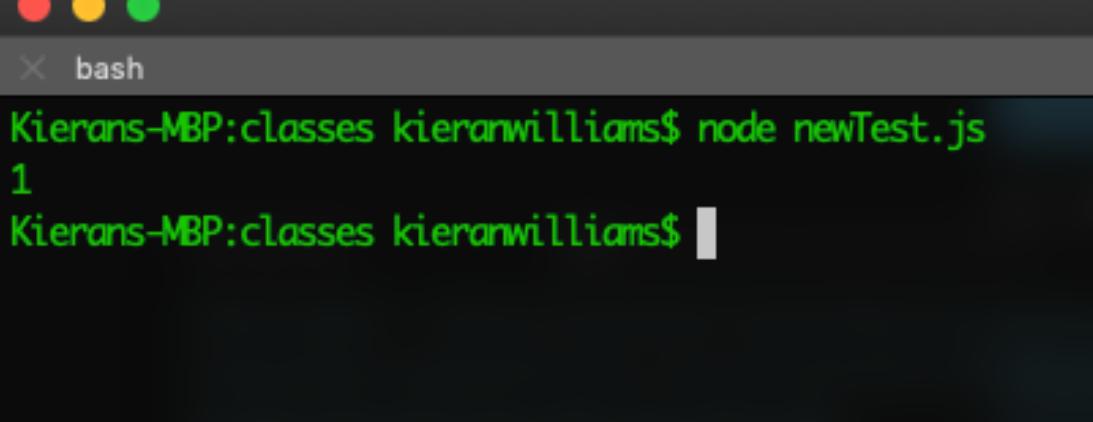
Pass

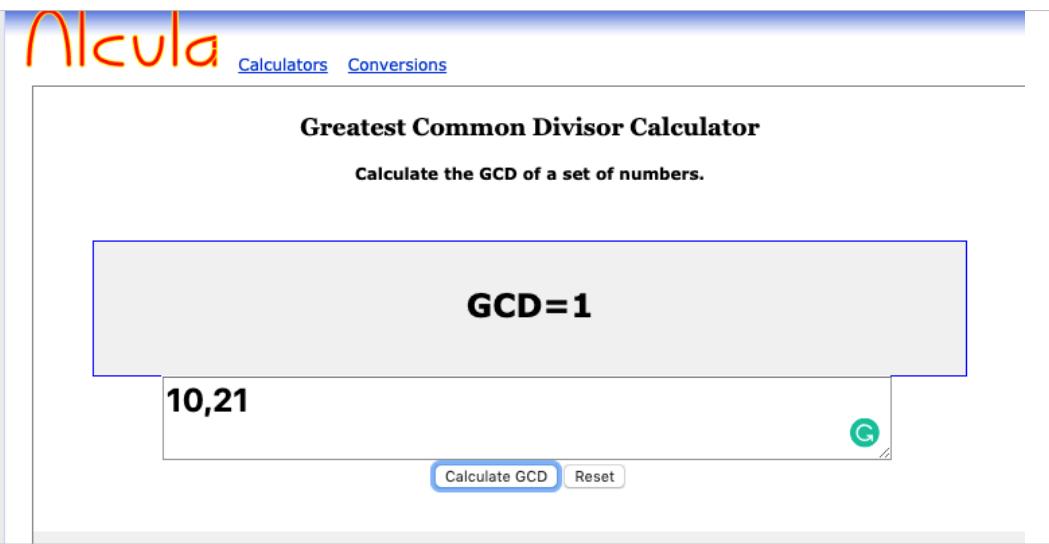
ConversionRate Class

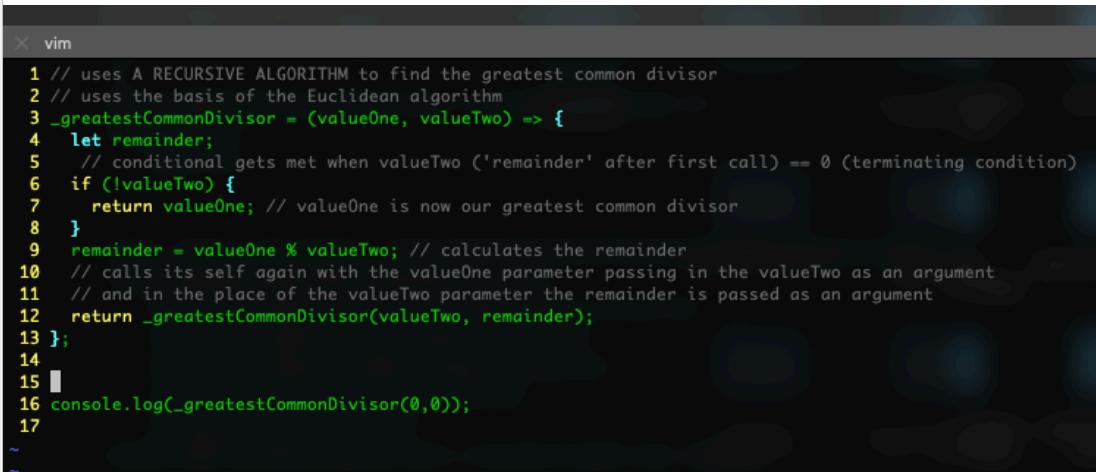
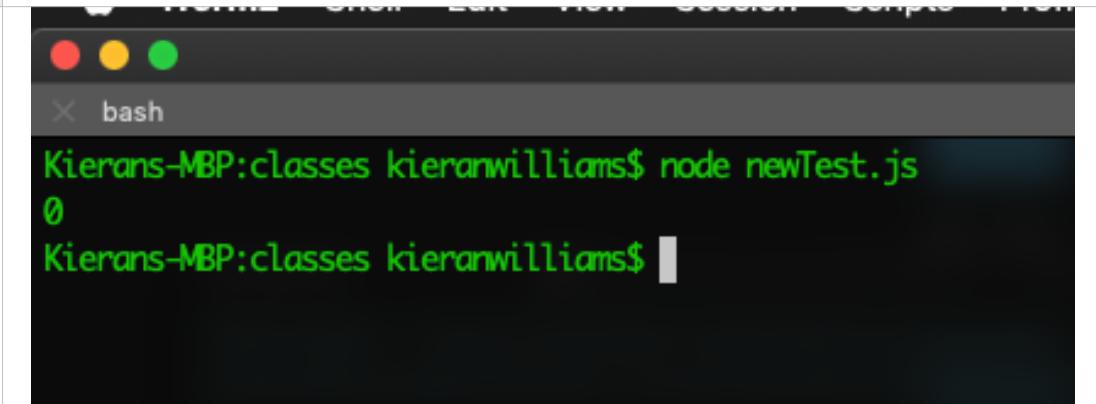
greatestCommonDivisor —used to get the greatest common divisor shared between two values

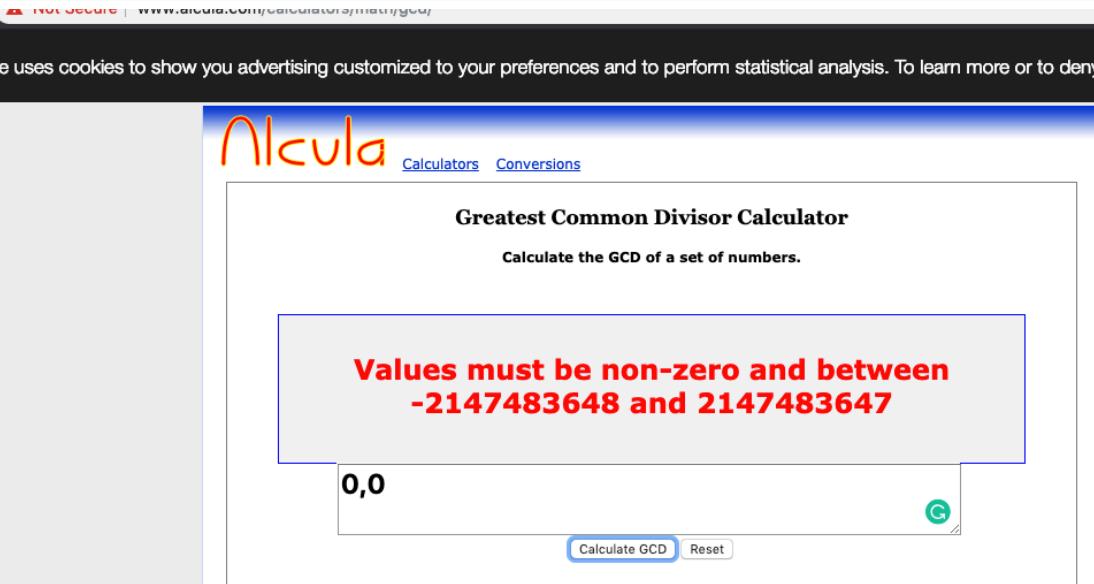
Test	* Test to see if by passing in two integer values that have a greatest common divisor other than 1, the correct greatest common divisor is returned (typical)
The Test Code	<pre>x vim 1 // uses A RECURSIVE ALGORITHM to find the greatest common divisor 2 // uses the basis of the Euclidean algorithm 3 _greatestCommonDivisor = (valueOne, valueTwo) => { 4 let remainder; 5 // conditional gets met when valueTwo ('remainder' after first call) == 0 (terminating condition) 6 if (!valueTwo) { 7 return valueOne; // valueOne is now our greatest common divisor 8 } 9 remainder = valueOne % valueTwo; // calculates the remainder 10 // calls its self again with the valueOne parameter passing in the valueTwo as an argument 11 // and in the place of the valueTwo parameter the remainder is passed as an argument 12 return this[_greatestCommonDivisor](valueTwo, remainder); 13 }; 14 15 16 console.log(_greatestCommonDivisor(20,10)); 17 ~ ~</pre>
Code execution	<pre>x bash Kierans-MBP:classes kieranwilliams\$ node newTest.js 10 Kierans-MBP:classes kieranwilliams\$</pre>

Proof that the greatest common divisor is correct	
Pass/ Fail	Pass

Test	* Test to see if by passing in two integer values that have a greatest common divisor other than 1, the correct greatest common divisor is returned (typical)
The Test Code	
Code execution	

Proof that the greatest common divisor is correct	
Pass/ Fail	Pass

Test	* Test to see if by passing in two 0's as the values. 0 and 0 has no greatest common divisor and so the program needs to run without crashing and return 0 (erroneous)
The Test Code	
Code execution	

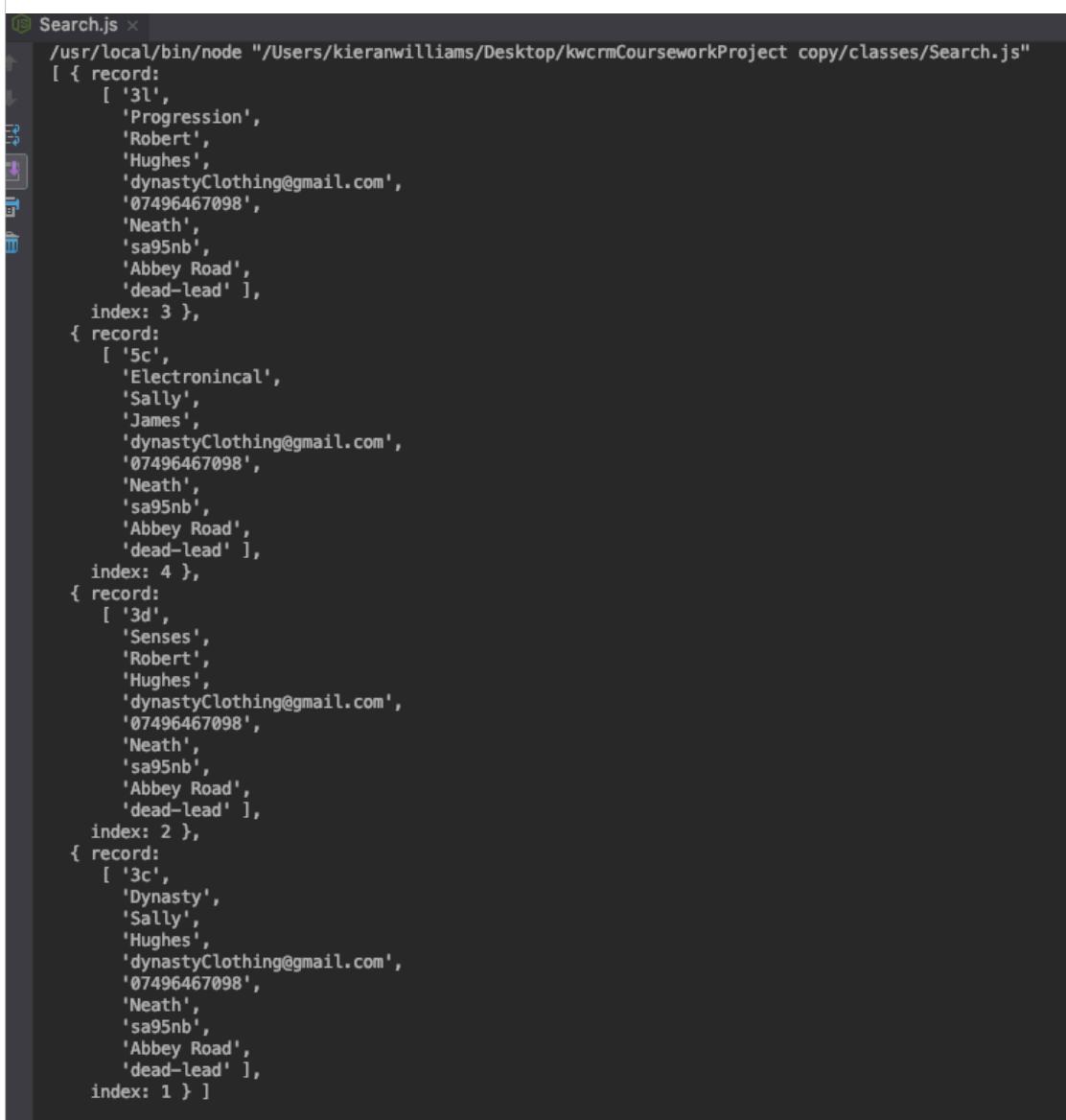
Proof that the greatest common divisor is correct	
Pass/ Fail	Pass

Integration Tests

Search Class

binarySearch2D — searches for all matches of a search value on a specified column or a number of columns in a 2d array, returns a 2D array containing arrays that the search value was found in. (uses the `_checkBoundsForMatches` and the `binarySearch2DFinder` methods)

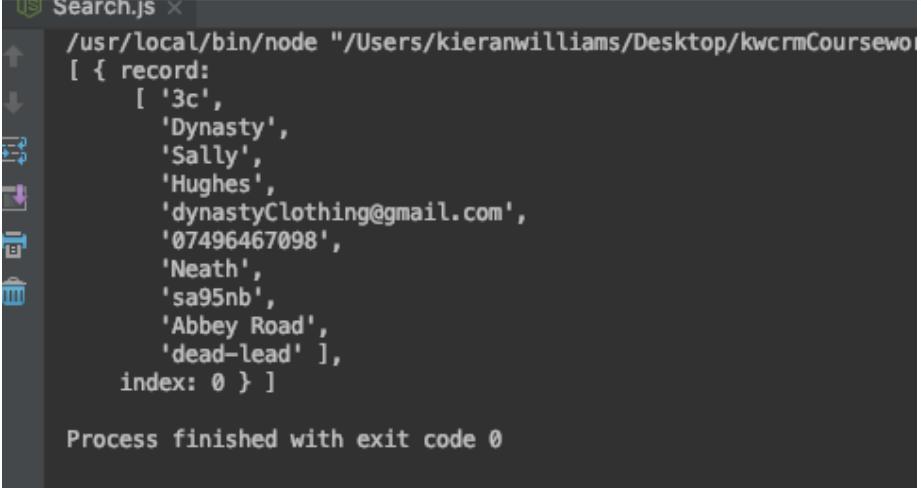
Test	* Test done by inputting a 2D array with equal length inner arrays, searching for only column (middle column) where the search value is in multiple arrays in the column that is being searched. Return value should be a 2D array with multiple inner arrays where the search value is found in (typical)
Proof of test code	<pre>let records = [['m3', 'BigMerch', 'Allen', 'Roger', 'alrog@gmail.com', '07496437123', 'Cardiff', 'ca078dw', '18 Main Street', 'past-client'], ['3c', 'Dynasty', 'Sally', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath', 'sa95nb', 'Abbey Road', 'dead-lead'], ['3d', 'Senses', 'Robert', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath', 'sa95nb', 'Abbey Road', 'dead-lead'], ['5e', 'James Media', 'James', 'Brinks', 'jamesbrinks@hotmail.com', '01792946751', 'Swansea', 'sa14na', '22 Abc Castle Road', 'recontact-lead'], ['3e', 'The Network Guys', 'Bob', 'Wally', 'boobywallyIT@networkgys.com', '01792876784', 'Swansea', 'sa14na', '22 Abc Castle Road', 'lead'], ['3l', 'Progression', 'Robert', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath', 'sa95nb', 'Abbey Road', 'dead-lead'], ['5c', 'Electronical', 'Sally', 'James', 'dynastyClothing@gmail.com', '07496467098', 'Neath', 'sa95nb', 'Abbey Road', 'dead-lead']]; // Search.binarySearch2D(array, columnsToBeSearched, searchValue); console.log(Search.binarySearch2D(records, [6], "Neath"));</pre>

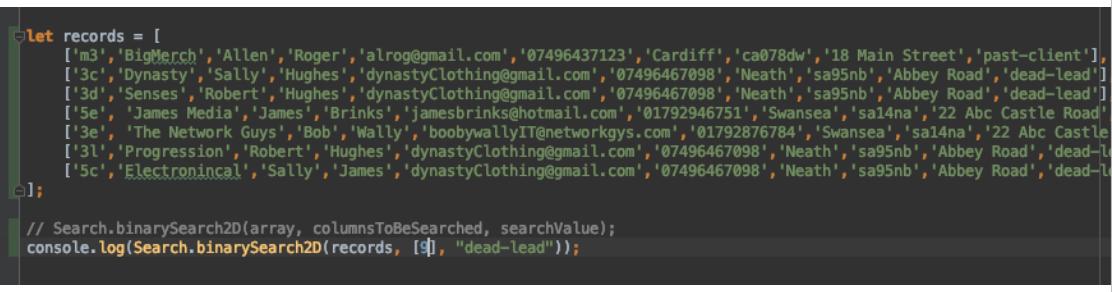
Code execution	
Pass/ Fail	Pass

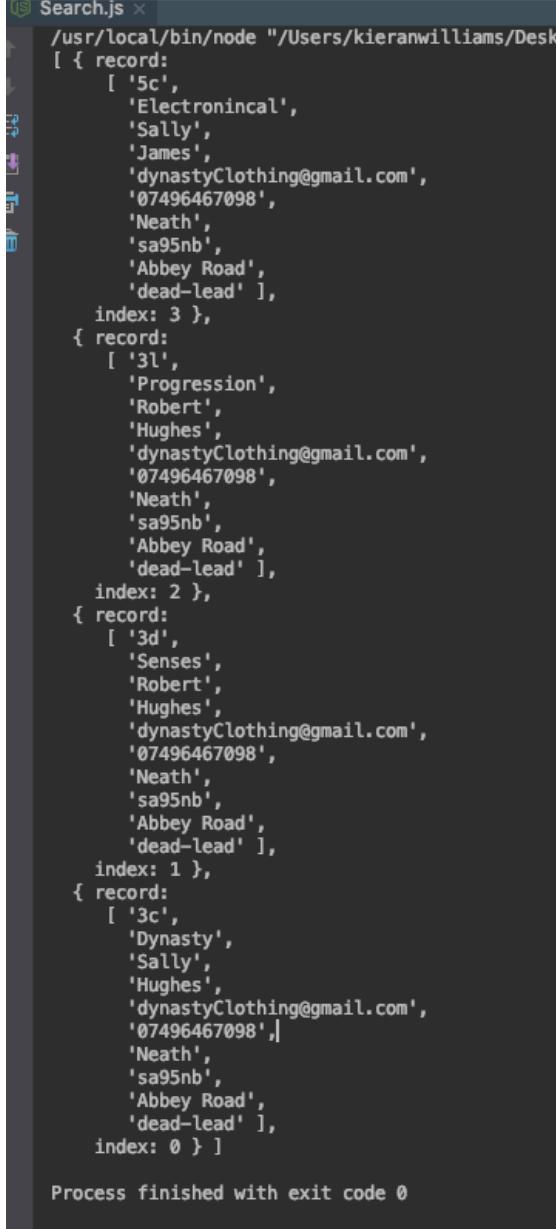
Test	* Test done by inputting a 2D array with equal length inner arrays, searching for only one column (middle column) where the search value is in one of the middle arrays in the column that is being searched. Return value should be a 2D array with one inner array where the search value is found in (typical)
------	---

Proof of test code	<pre>let records = [['m3', 'BigMerch', 'Allen', 'Roger', 'alrog@gmail.com', '07496437123', 'Cardiff', 'ca078dw', '18 Main Street', 'past-client'], ['3c', 'Dynasty', 'Sally', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath', 'sa95nb', 'Abbey Road', 'dead-lead'], ['3d', 'Senses', 'Robert', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath', 'sa95nb', 'Abbey Road', 'dead-lead'], ['5e', 'James Media', 'James', 'Brinks', 'jamesbrinks@hotmail.com', '01792946751', 'Swansea', 'sa14na', '22 Abc Castle Road, recontact-lead'], ['3e', 'The Network Guys', 'Bob', 'Wally', 'boobywallyIT@networkgys.com', '01792876784', 'Swansea', 'sa14na', '22 Abc Castle Road, recontact-lead'], ['3l', 'Progression', 'Robert', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath', 'sa95nb', 'Abbey Road', 'dead-lead'], ['5c', 'Electronical', 'Sally', 'James', 'dynastyClothing@gmail.com', '07496467098', 'Neath', 'sa95nb', 'Abbey Road', 'dead-lead']]; // Search.binarySearch2D(array, columnsToBeSearched, searchValue); console.log(Search.binarySearch2D(records, [3], "Brinks"));</pre>
Code execution	
Pass/ Fail	Pass

Test	<ul style="list-style-type: none"> * Test done by inputting a 2D array with equal length inner arrays, searching for only one column (first column) where the search value is in one of the first inner arrays in the column that is being searched. Return value should be a 2D array with one inner array where the search value is found in (extreme)
Proof of test code	<pre>let records = [['m3', 'BigMerch', 'Allen', 'Roger', 'alrog@gmail.com', '07496437123', 'Cardiff', 'ca078dw', '18 Main Street', 'past-client'], ['3c', 'Dynasty', 'Sally', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath', 'sa95nb', 'Abbey Road', 'dead-lead'], ['3d', 'Senses', 'Robert', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath', 'sa95nb', 'Abbey Road', 'dead-lead'], ['5e', 'James Media', 'James', 'Brinks', 'jamesbrinks@hotmail.com', '01792946751', 'Swansea', 'sa14na', '22 Abc Castle Road, recontact-lead'], ['3e', 'The Network Guys', 'Bob', 'Wally', 'boobywallyIT@networkgys.com', '01792876784', 'Swansea', 'sa14na', '22 Abc Castle Road, recontact-lead'], ['3l', 'Progression', 'Robert', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath', 'sa95nb', 'Abbey Road', 'dead-lead'], ['5c', 'Electronical', 'Sally', 'James', 'dynastyClothing@gmail.com', '07496467098', 'Neath', 'sa95nb', 'Abbey Road', 'dead-lead']]; // Search.binarySearch2D(array, columnsToBeSearched, searchValue); console.log(Search.binarySearch2D(records, [0], "3c"));</pre>

Code execution	
Pass/ Fail	Pass

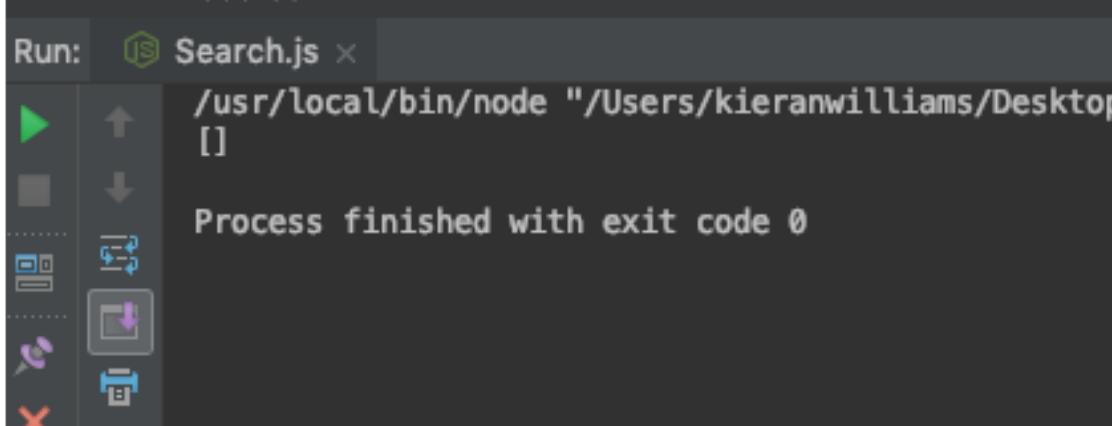
Test	* Test done by inputting a 2D array with equal length inner arrays, searching for only one column (middle column) where the search value is in one of the last inner arrays in the column that is being searched. Return value should be a 2D array with one inner array where the search value is found in (extreme)
Proof of test code	

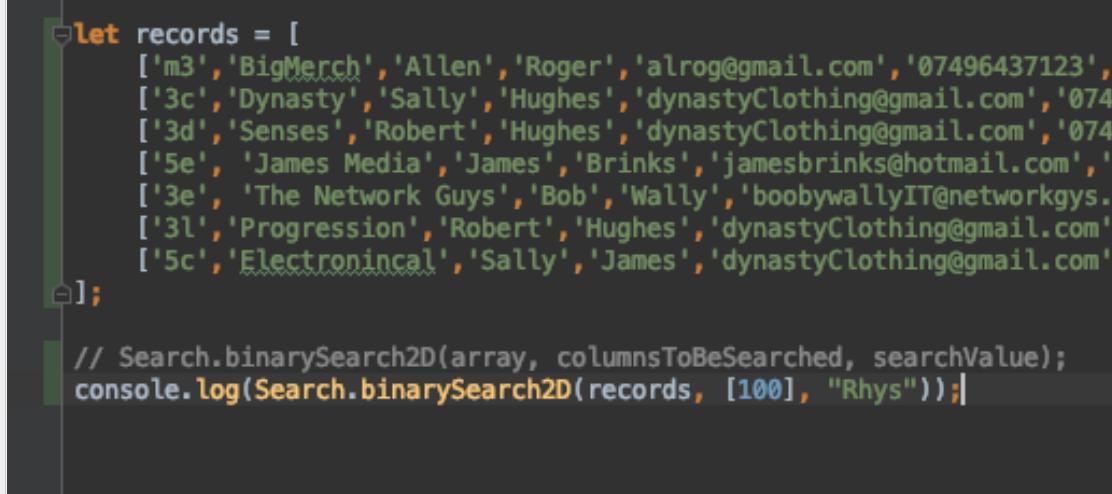
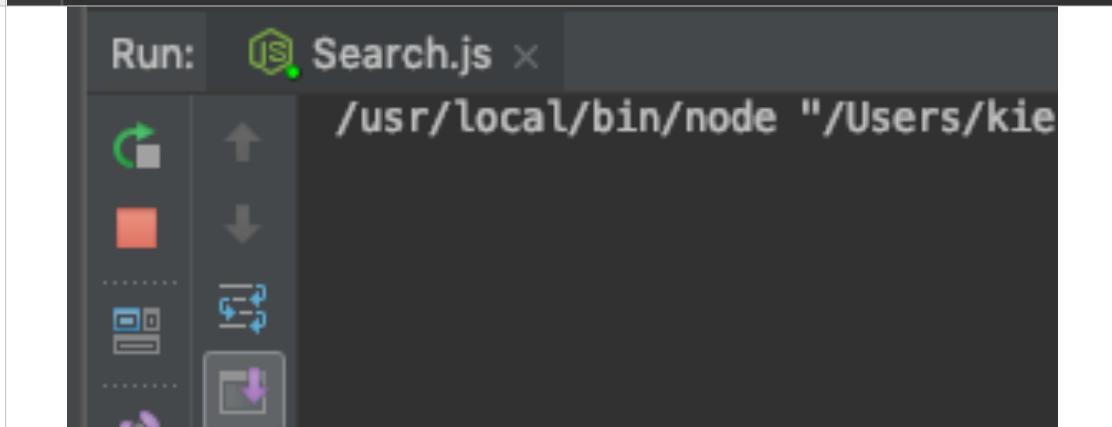
Code execution	
Pass/ Fail	Pass

Test	* Test done by inputting a 2D array with equal length inner arrays, searching for only one column (middle column) where the search value is the first inner arrays in the column that is being searched. Return value should be a 2D array with one inner array where the search value is found in (extreme)
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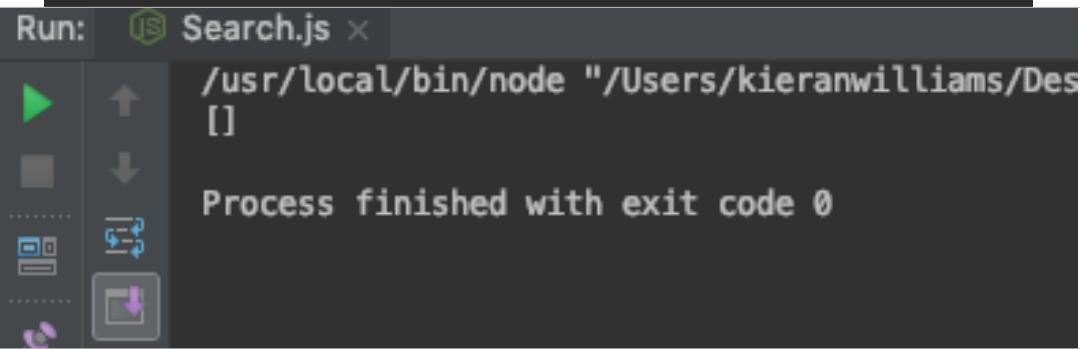
Proof of test code	<pre> let records = [['m3', 'BigMerch', 'Allen', 'Roger', 'alrog@gmail.com', '07496437123', 'Cardiff', 'ca078dw'], ['3c', 'Dynasty', 'Sally', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath', ['3d', 'Senses', 'Robert', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath', ['5e', 'James Media', 'James', 'Brinks', 'jamesbrinks@hotmail.com', '01792946751', 'Bridgend'], ['3e', 'The Network Guys', 'Bob', 'Wally', 'boobywallyIT@networkgys.com', '01792876'], ['3l', 'Progression', 'Robert', 'Hughes', 'dynastyClothing@gmail.com', '07496467098'], ['5c', 'Electronical', 'Sally', 'James', 'dynastyClothing@gmail.com', '07496467098']; // Search.binarySearch2D(array, columnsToBeSearched, searchValue); console.log(Search.binarySearch2D(records, [2], "Allen")); </pre>
Code execution	<pre> /usr/local/bin/node "/Users/kieranwilliams/ [{ record: ['m3', 'BigMerch', 'Allen', 'Roger', 'alrog@gmail.com', '07496437123', 'Cardiff', 'ca078dw', '18 Main Street', 'past-client'], index: 0 }] Process finished with exit code 0 </pre>
Pass/ Fail	Pass

Test	<ul style="list-style-type: none"> * Test done by inputting a 2D array with equal length inner arrays, searching for a column that is typical and the search value is anything that is typical but not a value that is in any of the inner arrays in the column chosen. Return value should be a 1 dimensional array with no elements inside of it (erroneous)
Proof of test code	<pre> let records = [['m3', 'BigMerch', 'Allen', 'Roger', 'alrog@gmail.com', '07496437123', 'Cardiff', 'ca078dw'], ['3c', 'Dynasty', 'Sally', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath', ['3d', 'Senses', 'Robert', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath', ['5e', 'James Media', 'James', 'Brinks', 'jamesbrinks@hotmail.com', '01792946751', 'Bridgend'], ['3e', 'The Network Guys', 'Bob', 'Wally', 'boobywallyIT@networkgys.com', '01792876'], ['3l', 'Progression', 'Robert', 'Hughes', 'dynastyClothing@gmail.com', '07496467098'], ['5c', 'Electronical', 'Sally', 'James', 'dynastyClothing@gmail.com', '07496467098']; // Search.binarySearch2D(array, columnsToBeSearched, searchValue); console.log(Search.binarySearch2D(records, [2], "Rhys")); </pre>

Code execution	 <pre>Run: Search.js × /usr/local/bin/node "/Users/kieranwilliams/Desktop/Search.js" [] Process finished with exit code 0</pre>
Pass/ Fail	Pass

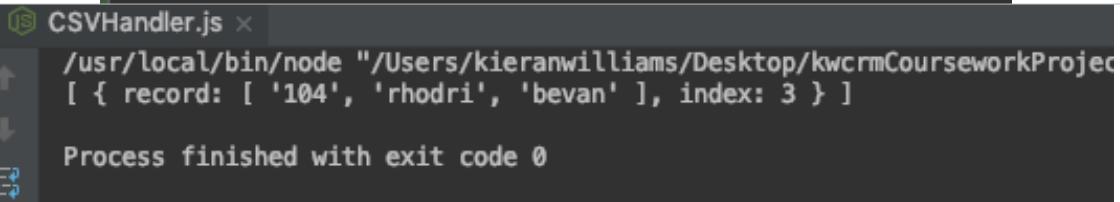
Test	<ul style="list-style-type: none"> * Test done by inputting a 2D array with equal length inner arrays, searching for a column that is out of bounds for the inner arrays where the search value is anything that is typical. Return value should be a 1 dimensional array with no elements inside of it (erroneous)
Proof of test code	 <pre>let records = [['m3', 'BigMerch', 'Allen', 'Roger', 'alrog@gmail.com', '07496437123'], ['3c', 'Dynasty', 'Sally', 'Hughes', 'dynastyClothing@gmail.com', '074'], ['3d', 'Senses', 'Robert', 'Hughes', 'dynastyClothing@gmail.com', '074'], ['5e', 'James Media', 'James', 'Brinks', 'jamesbrinks@hotmail.com', ''], ['3e', 'The Network Guys', 'Bob', 'Wally', 'boobywallyIT@networkgys.'], ['3l', 'Progression', 'Robert', 'Hughes', 'dynastyClothing@gmail.com'], ['5c', 'Electronical', 'Sally', 'James', 'dynastyClothing@gmail.com']; // Search.binarySearch2D(array, columnsToBeSearched, searchValue); console.log(Search.binarySearch2D(records, [100], "Rhys"));</pre>
Code execution (The code never finished running)	 <pre>Run: Search.js × /usr/local/bin/node "/Users/kieranwilliams/Desktop/Search.js"</pre>
Pass/ Fail	Fail

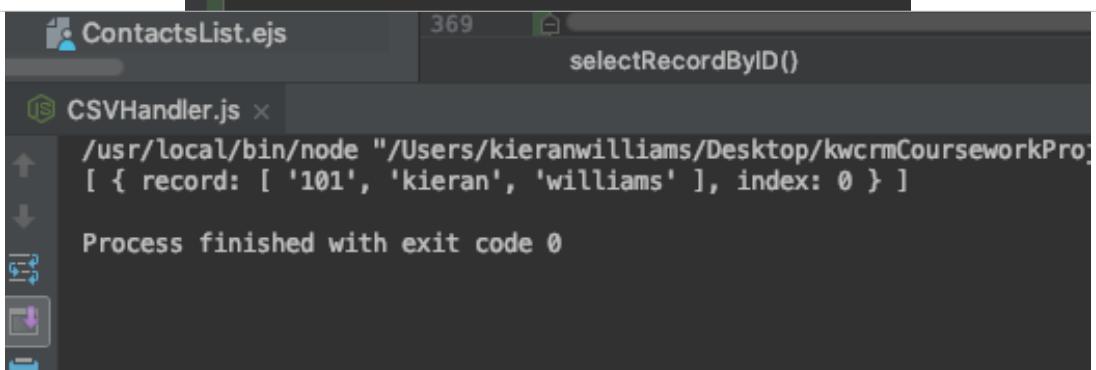
Reason For Fail	The searching got stuck in a never ending loop as none of the if statements were getting accessed, yet the loop condition was still being met
Old code that was causing the issue	<pre> // loop that will keep going until last > first or the matching re // the array[middle][col] ---> middle is the row that is currently while (first <= last) { // to avoid a crash, the program will check to see if middle i // record and that if it is a negative value. In either instan if (middle > array.length - 1 middle < 0){ break; } if(array[middle][col] === searchValue){ //pushes the array and an index contained in a javascript recordsFound.push({ record : array[middle], index : middle }); // finds any matches in the upper and lower bounds of the upperAndLowerBoundMatches = Search[_checkBoundsForMatches] upperAndLowerBoundMatches.forEach((match) => { recordsFound.push(match); }); break; // gets out of loop } // terminates the loop if the middle value is 0 as it will cau // crash is due to the fact that middle will turn into a negat if (middle === 0) { break; } if(searchValue < array[middle][col]){ last = middle - 1; middle = Math.floor((first + last)/2); } if(searchValue > array[middle][col]){ first = middle + 1; middle = Math.floor((first + last)/2); } } if (recordsFound.length > 0){ return recordsFound; } };</pre>

Amended code that solves the issue	<pre> // loop that will keep going until last > first or the matching records // the array[middle][col] —> middle is the row that is currently unde while (first <= last) { // to avoid a crash, the program will check to see if middle is gre // record and that if it is a negative value. In either instance the if (middle > array.length - 1 middle < 0){ break; } else if(array[middle][col] == searchValue){ //pushes the array and an index contained in a javascript object recordsFound.push({ record : array[middle], index : middle }); // finds any matches in the upper and lower bounds of the upperAndLowerBoundMatches = Search[_checkBoundsForMatches](array, middle); upperAndLowerBoundMatches.forEach((match) => { recordsFound.push(match); }); break; // gets out of loop } // terminates the loop if the middle value is 0 as it will cause a // crash is due to the fact that middle will turn into a negative va else if (middle == 0) { break; } else if(searchValue < array[middle][col]){ last = middle - 1; middle = Math.floor((first + last)/2); } else if(searchValue > array[middle][col]){ first = middle + 1; middle = Math.floor((first + last)/2); } else return undefined; } if (recordsFound.length > 0){ return recordsFound; } </pre>
Code Execution	
Pass/ Fail	Pass

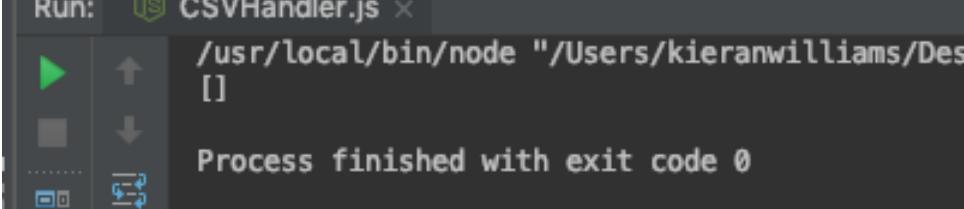
CSVHandler Class

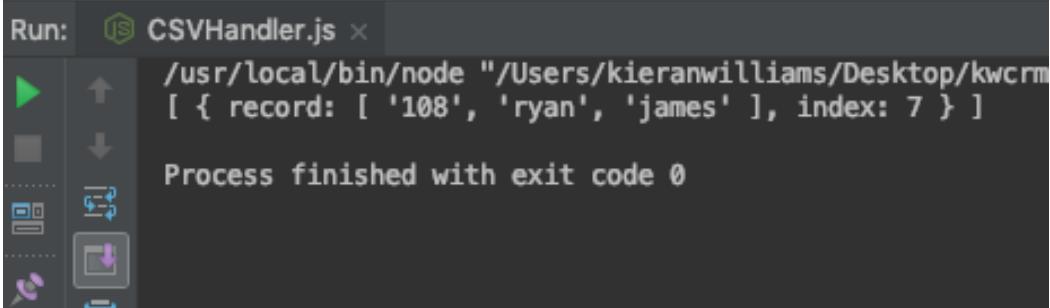
selectRecordById — from a 2D array the id search value gets searched for on the first element of the inner arrays, when a value is found it should return a record

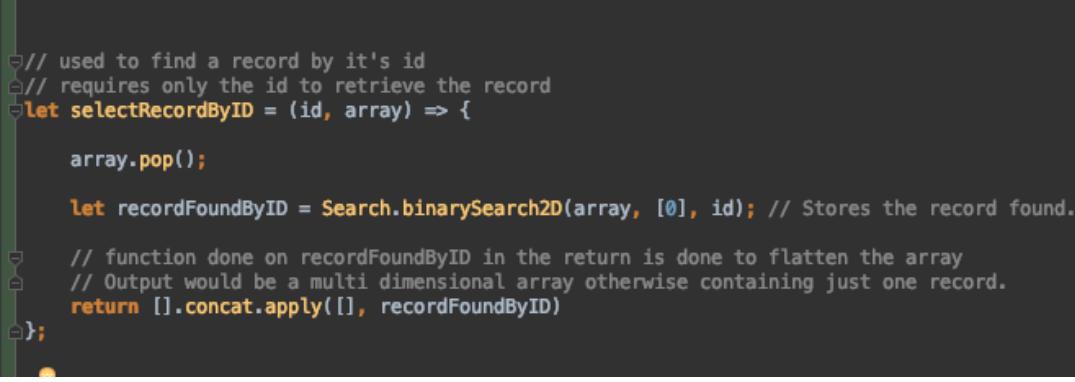
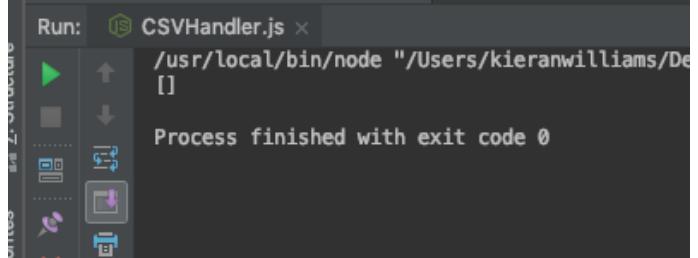
Test	* Test done by inputting a 2D array with equal length inner arrays, and passing in the id of a record that exists in one of the middle inner arrays. Should get an array with all of that record's data in it (typical)
Proof of test code	<pre>// used to find a record by its id // requires only the id to retrieve the record let selectRecordByID = (id, array) => { array.pop(); let recordFoundByID = Search.binarySearch2D(array, [0], id); // Stores the record found. // function done on recordFoundByID in the return is done to flatten the array // Output would be a multi dimensional array otherwise containing just one record. return [].concat.apply([], recordFoundByID) };</pre>
Test data	<pre>let array = [["101", "kieran", "williams"], ["102", "jamie", "lewis"], ["103", "sally", "alex"], ["104", "rhodri", "bevan"], ["105", "callum", "james"], ["106", "kieran", "james"], ["107", "bob", "james"], ["108", "ryan", "james"],]; console.log(selectRecordByID("104", array));</pre>
Code execution	 <pre>CSVHandler.js × /usr/local/bin/node "/Users/kieranwilliams/Desktop/kwcrmCourseworkProject/CSVHandler.js" [{ record: ['104', 'rhodri', 'bevan'], index: 3 }] Process finished with exit code 0</pre>
Pass/ Fail	Pass

Test	* Test done by inputting a 2D array with equal length inner arrays, and passing in the id of a record that exists in first inner array. Should get an array with all of that record's data in (extreme)
Proof of test code	<pre>// used to find a record by it's id // requires only the id to retrieve the record let selectRecordByID = (id, array) => { array.pop(); let recordFoundByID = Search.binarySearch2D(array, [0], id); // Stores the record found. // function done on recordFoundByID in the return is done to flatten the array // Output would be a multi dimensional array otherwise containing just one record. return [].concat.apply([], recordFoundByID) };</pre>
Test data	<pre>let array = [["101", "kieran", "williams"], ["102", "jamie", "lewis"], ["103", "sally", "alex"], ["104", "rhodri", "bevan"], ["105", "callum", "james"], ["106", "kieran", "james"], ["107", "bob", "james"], ["108", "ryan", "james"],]; console.log(selectRecordByID("101", array));</pre>
Code execution	
Pass/ Fail	Pass

Test	* Test done by inputting a 2D array with equal length inner arrays, and passing in the id of a record that exists in last inner array. Should get an array with all of that record's data in (extreme)
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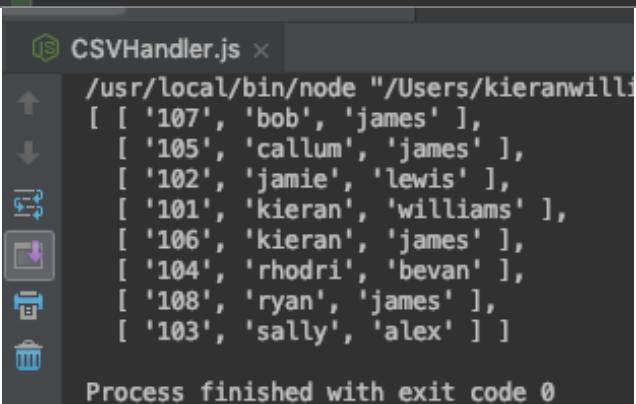
Proof of test code	<pre>// used to find a record by it's id // requires only the id to retrieve the record let selectRecordByID = (id, array) => { array.pop(); let recordFoundByID = Search.binarySearch2D(array, [0], id); // Stores the record found. // function done on recordFoundByID in the return is done to flatten the array // Output would be a multi dimensional array otherwise containing just one record. return [].concat.apply([], recordFoundByID) };</pre>
Test data	<pre>let array = [["101", "kieran", "williams"], ["102", "jamie", "lewis"], ["103", "sally", "alex"], ["104", "rhodri", "bevan"], ["105", "callum", "james"], ["106", "kieran", "james"], ["107", "bob", "james"], ["108", "ryan", "james"],]; console.log(selectRecordByID("108", array));</pre>
Code execution	
Pass/ Fail	Fail
Reason for fail	The last record should have been returned. However, an empty array got returned. This happened because the last record is being removed in the array.pop() this needs to be done as when the function is used with a csv file, there will be an empty array element at the end.
Fix for the problem	To get the system to work, there will need to be an additional empty record in the 2d array to replicate how it will be retuned when the csv file is used.
Changed data set	

Code execution	
Pass/ Fail	Pass

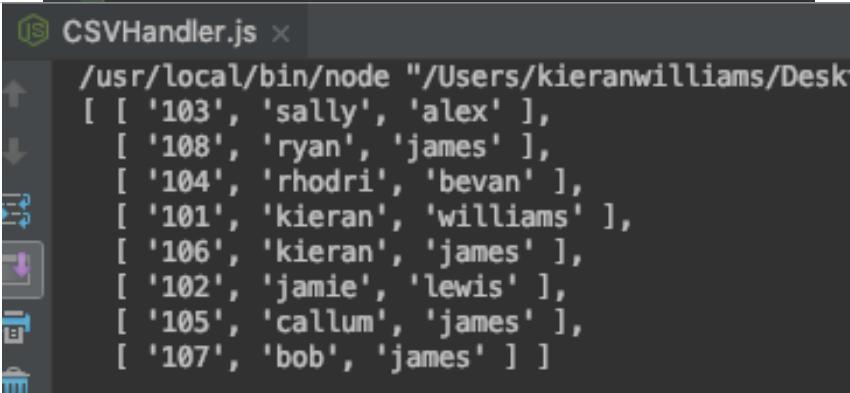
Test	* Test done by inputting a 2D array with equal length inner arrays, and passing in the id that none of the inner arrays have. Should get an empty array (erroneous)
Proof of test code	
Test data	
Code execution	

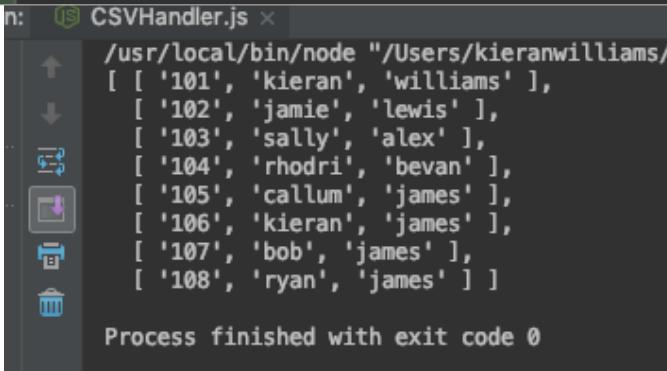
Pass/ Fail	Pass
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sortBy — used to sort the 2d array by a certain column, returns the sorted 2D array in both ascending and descending order (uses the bubbleSort2D method)

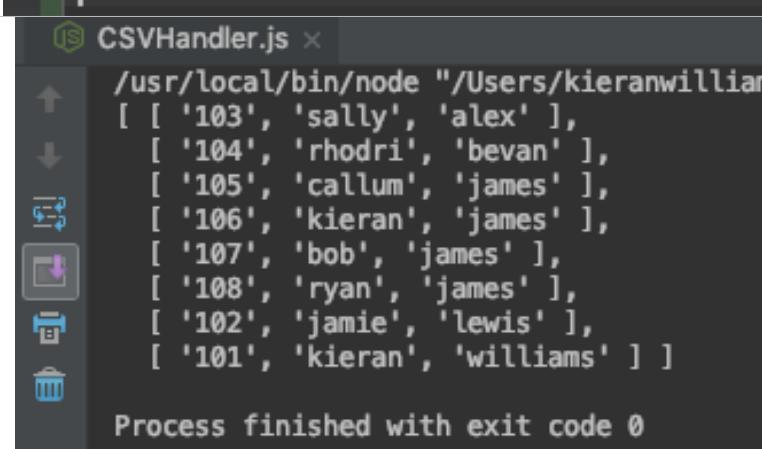
Test	* Test done by inputting a 2D array with equal length inner arrays, set the column to get sorted by to be one of the middle columns in ascending order. Should return a (typical)
Proof of test code	<pre>// column to sort by should be a number of the index of the field that will get sorted // ascending should be set to true or false depending you want the 2d array to be in // ascending order: true or descending order: false // if the ascending parameter has no value passed as argument, it will sort it in ascending order // as that is how I defined the method in the sort class. let sortBy = (columnToSortBy, ascending, array) => { let sortedArray = Sort.bubbleSort2D(array, columnToSortBy, ascending); sortedArray.pop(); // gets rid of the empty element at the end of the array return sortedArray; }; console.log(sortBy(1, true, array));</pre>
Test data	<pre>let array = [["101", "kieran", "williams"], ["102", "jamie", "lewis"], ["103", "sally", "alex"], ["104", "rhodri", "bevan"], ["105", "callum", "james"], ["106", "kieran", "james"], ["107", "bob", "james"], ["108", "ryan", "james"], []];</pre>
Code execution	 <pre>/usr/local/bin/node "/Users/kieranwilliams/Desktop/CSVHandler.js" [['107', 'bob', 'james'], ['105', 'callum', 'james'], ['102', 'jamie', 'lewis'], ['101', 'kieran', 'williams'], ['106', 'kieran', 'james'], ['104', 'rhodri', 'bevan'], ['108', 'ryan', 'james'], ['103', 'sally', 'alex']] Process finished with exit code 0</pre>

Pass/ Fail	Pass
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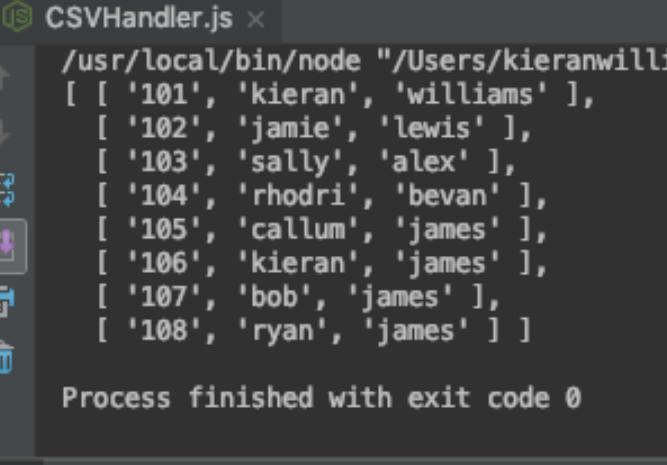
Test	* Test done by inputting a 2D array with equal length inner arrays, set the column to get sorted by to be one of the middle columns in descending order (typical)
Proof of test code	<pre>// column to sort by should be a number of the index of the field that will get sorted // ascending should be set to true or false depending you want the 2d array to be in // ascending order: true or descending order: false // if the ascending parameter has no value passed as argument, it will sort it in ascending // as that is how I defined the method in the sort class. let sortBy = (columnToSortBy, ascending, array) => { let sortedArray = Sort.bubbleSort2D(array, columnToSortBy, ascending); sortedArray.pop(); // gets rid of the empty element at the end of the array return sortedArray; }; console.log(sortBy(1, false, array));</pre>
Test data	 <pre>let array = [["101", "kieran", "williams"], ["102", "jamie", "lewis"], ["103", "sally", "alex"], ["104", "rhodri", "bevan"], ["105", "callum", "james"], ["106", "kieran", "james"], ["107", "bob", "james"], ["108", "ryan", "james"], []];</pre>
Code execution	 <pre>/usr/local/bin/node "/Users/kieranwilliams/Desktop/CSVHandler.js" [['103', 'sally', 'alex'], ['108', 'ryan', 'james'], ['104', 'rhodri', 'bevan'], ['101', 'kieran', 'williams'], ['106', 'kieran', 'james'], ['102', 'jamie', 'lewis'], ['105', 'callum', 'james'], ['107', 'bob', 'james']]</pre>
Pass/ Fail	Pass

Test	* Test done by inputting a 2D array with equal length inner arrays, set the column to get sorted by to be the first column, done in ascending order (extreme)
Proof of test code	<pre>// column to sort by should be a number of the index of the field that will get sorted // ascending should be set to true or false depending you want the 2d array to be in // ascending order: true or descending order: false // if the ascending parameter has no value passed as argument, it will sort it in ascending order // as that is how I defined the method in the sort class. let sortBy = (columnToSortBy, ascending, array) => { let sortedArray = Sort.bubbleSort2D(array, columnToSortBy, ascending); sortedArray.pop(); // gets rid of the empty element at the end of the array return sortedArray; }; console.log(sortBy(0, true, array));</pre>
Test data	 <pre>let array = [["101", "kieran", "williams"], ["102", "jamie", "lewis"], ["103", "sally", "alex"], ["104", "rhodri", "bevan"], ["105", "callum", "james"], ["106", "kieran", "james"], ["107", "bob", "james"], ["108", "ryan", "james"], []];</pre>
Code execution	 <pre>n: CSVHandler.js x /usr/local/bin/node "/Users/kieranwilliams/... [['101', 'kieran', 'williams'], ['102', 'jamie', 'lewis'], ['103', 'sally', 'alex'], ['104', 'rhodri', 'bevan'], ['105', 'callum', 'james'], ['106', 'kieran', 'james'], ['107', 'bob', 'james'], ['108', 'ryan', 'james']] Process finished with exit code 0</pre>
Pass/ Fail	Pass

Test	* Test done by inputting a 2D array with equal length inner arrays, set the column to get sorted by to be the last column, done in ascending order (extreme)
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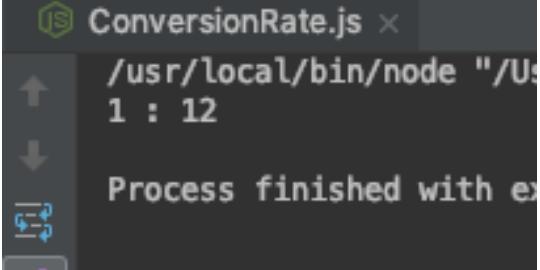
Proof of test code	<pre>// column to sort by should be a number of the index of the field that will get sorted // ascending should be set to true or false depending you want the 2d array to be in // ascending order: true or descending order: false // if the ascending parameter has no value passed as argument, it will sort it in ascending order // as that is how I defined the method in the sort class. let sortBy = (columnToSortBy, ascending, array) => { let sortedArray = Sort.bubbleSort2D(array, columnToSortBy, ascending); sortedArray.pop(); // gets rid of the empty element at the end of the array return sortedArray; }; console.log(sortBy(2, true, array));</pre>
Test data	 <pre>let array = [["101", "kieran", "williams"], ["102", "jamie", "lewis"], ["103", "sally", "alex"], ["104", "rhodri", "bevan"], ["105", "callum", "james"], ["106", "kieran", "james"], ["107", "bob", "james"], ["108", "ryan", "james"], []];</pre>
Code execution	 <pre>CSVHandler.js × /usr/local/bin/node "/Users/kieranwilliam [['103', 'sally', 'alex'], ['104', 'rhodri', 'bevan'], ['105', 'callum', 'james'], ['106', 'kieran', 'james'], ['107', 'bob', 'james'], ['108', 'ryan', 'james'], ['102', 'jamie', 'lewis'], ['101', 'kieran', 'williams']]</pre> <p>Process finished with exit code 0</p>
Pass/ Fail	Pass

Test	* Test done by inputting a 2D array with equal length inner arrays, test the column to sorted by to be a column out of the bounds of the the inner arrays length, done in ascending order. Should return the data not sorted (erroneous)
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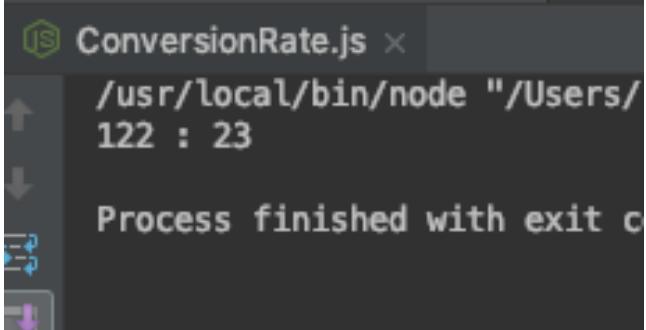
Proof of test code	<pre>// if the ascending parameter has no value passed as argument, it will sort // as that is how I defined the method in the sort class. let sortBy = (columnToSortBy, ascending, array) => { let sortedArray = Sort.bubbleSort2D(array, columnToSortBy, ascending); sortedArray.pop(); // gets rid of the empty element at the end of the array return sortedArray; }; console.log(sortBy(3, true, array));</pre>
Test data	<pre>let array = [["101", "kieran", "williams"], ["102", "jamie", "lewis"], ["103", "sally", "alex"], ["104", "rhodri", "bevan"], ["105", "callum", "james"], ["106", "kieran", "james"], ["107", "bob", "james"], ["108", "ryan", "james"], []];</pre>
Code execution	 <pre>CSVHandler.js × /usr/local/bin/node "/Users/kieranwilliams/Desktop/CSVHandler.js" [['101', 'kieran', 'williams'], ['102', 'jamie', 'lewis'], ['103', 'sally', 'alex'], ['104', 'rhodri', 'bevan'], ['105', 'callum', 'james'], ['106', 'kieran', 'james'], ['107', 'bob', 'james'], ['108', 'ryan', 'james']] Process finished with exit code 0</pre>
Pass/ Fail	Pass

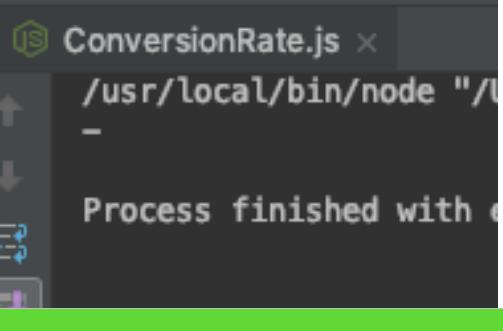
ConversionRate Class

getConversionRateRatioAsString —used to return a ratio in its lowest form by taking two values from which the ratio is calculated from

Test	* Test done by testing that it returns a ratio in its lowest terms when the two values can be converted into lower terms, these will be values that share a greatest common divisor other than 1 (typical)
Proof of test code	<pre>// method outputs a ratio as type string of the conversion rate static [_getConversionRateRatioAsString] (numberOfClientsGained, numberOfLeadsLost) { // if both the numberOfClientsGained and the numberOfLeadsLost is == 0, // output a dash so that the output is not 'NaN : NaN' if (numberOfClientsGained === 0 &amp; numberOfLeadsLost === 0) { return '-' } // stores the greatest common divisor in the gcd variable so that the ratio can be // shown in it's lowest form let gcd = this[_greatestCommonDivisor](numberOfClientsGained, numberOfLeadsLost); // the ratio values are calculated by dividing the inputs by the greatest common divisor // the output is a string such as "2:3" if the inputs for example were 20 and 30 return `\${numberOfClientsGained/gcd} : \${numberOfLeadsLost/gcd}`; }</pre>
Test data	<pre>console.log(ConversionRate[_getConversionRateRatioAsString](20,240));</pre>
Code execution	
Pass/ Fail	Pass

Test	* Test done by testing that it returns a ratio in its lowest terms when the two values can not be converted into lower terms, these will be values that share a greatest common divisor of 1 (extreme)
Proof of test code	<pre>// method outputs a ratio as type string of the conversion rate static [_getConversionRateRatioAsString] (numberOfClientsGained, numberOfLeadsLost) { // if both the numberOfClientsGained and the numberOfLeadsLost is == 0, // output a dash so that the output is not 'NaN : NaN' if (numberOfClientsGained === 0 &amp; numberOfLeadsLost === 0) { return '-' } // stores the greatest common divisor in the gcd variable so that the ratio can be // shown in it's lowest form let gcd = this[_greatestCommonDivisor](numberOfClientsGained, numberOfLeadsLost); // the ratio values are calculated by dividing the inputs by the greatest common divisor // the output is a string such as "2:3" if the inputs for example were 20 and 30 return `\${numberOfClientsGained/gcd} : \${numberOfLeadsLost/gcd}`; }</pre>

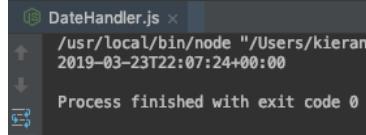
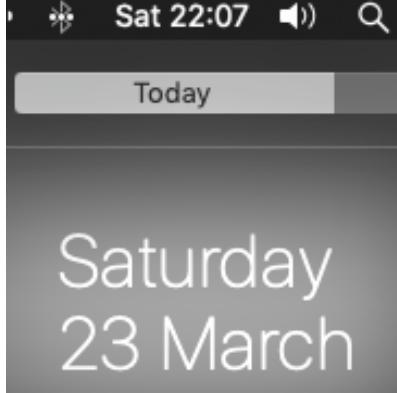
Test data	<pre>console.log(ConversionRate[_getConversionRateRatioAsString](122,23));</pre>
Code execution	
Pass/ Fail	Pass

Test	* Test done by testing that it handles the case where both values are 0. Should return a string of either '0 : 0' or something similar (erroneous)
Proof of test code	<pre>// method outputs a ratio as type string of the conversion rate static [_getConversionRateRatioAsString] (numberOfClientsGained, numberOfLeadsLost) { // if both the numberOfClientsGained and the numberOfLeadsLost is == 0, // output a dash so that the output is not 'NaN : NaN' if (numberOfClientsGained === 0 && numberOfLeadsLost === 0) { return '-'; } // stores the greatest common divisor in the gcd variable so that the ratio can be // shown in its lowest form let gcd = this[_greatestCommonDivisor](numberOfClientsGained, numberOfLeadsLost); // the ratio values are calculated by dividing the inputs by the greatest common divisor // the output is a string such as "2:3" if the inputs for example were 20 and 30 return `\${numberOfClientsGained/gcd} : \${numberOfLeadsLost/gcd}`; }</pre>
Test data	<pre>console.log(ConversionRate[_getConversionRateRatioAsString](0,0));</pre>
Code execution	
Pass/ Fail	Pass

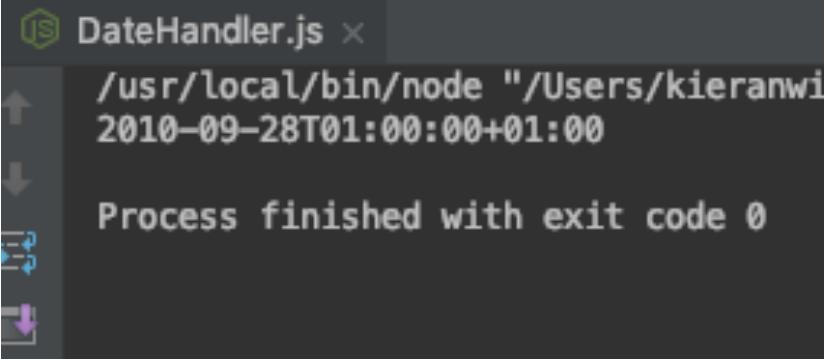
Interface Testing

Date Handler Class

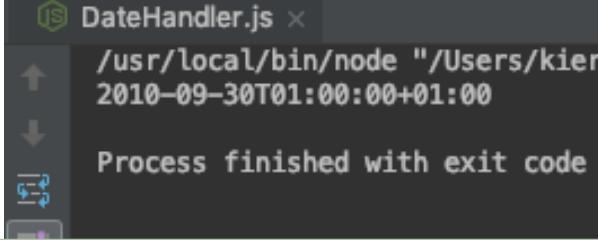
getCurrentDateTime — used to get the users current date and time (uses a library called moment)

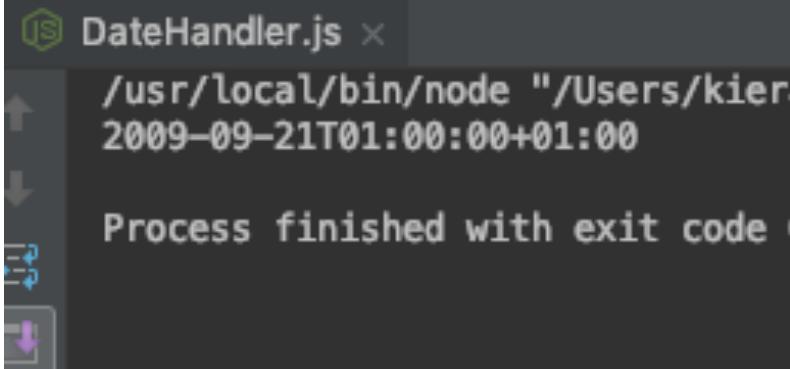
Test	* Test to see if it works by running the function and checking the computers system time matches the returned value.
Proof of test code	<pre>// uses the moment library to get the current date and time // outputs a string in the standard date time stamp static getCurrentDateTime () { return moment().format(); }</pre>
Test data	<pre>console.log(DateHandler.getCurrentDateTime());</pre>
Code execution	
Proof that it works	
Pass/ Fail	Pass

subtractFromDate — used to subtract a number of days, weeks, months, and years from a date. Uses a library called moment to do this

Test	* Test that the system is able to handle when there is as number of days subtracted and produces the correct date as a return value.
Proof of test code	<pre>// can pass in date as standard date time format or as dd/mm/yyyy as type string // objectContainingTheAddingToMake should be type object can be a negative number to subtract days // objectContainingTheAddingToMake: examples: {days : 6} or {months: 9} or {years : 9} // can even do any combination: examples: {days : 7, months : 9} or {days : 8, months: 9, years : 2} static subtractFromDate (date, objectContainingTheSubtractionsToMake) { // if date is in dd/mm/yyyy format it gets changed into the standard date time format the moment. date = this[_ddmmyyyyToStandardDateTimeCheck] (date); // uses the moment library to make relevant changes to the date. The result then gets formatted to // date format by using the .format() return moment(date).subtract(objectContainingTheSubtractionsToMake).format(); }</pre>
Test data	<pre>209 module.exports = DateHandler; 210 211 212 console.log(DateHandler.subtractFromDate("21/10/2010", {days: 23}));</pre>
Code execution	 <pre>/usr/local/bin/node "/Users/kieranwi/DateHandler.js" 2010-09-28T01:00:00+01:00 Process finished with exit code 0</pre>
Pass/ Fail	Pass

Test	* Test that the system is able to handle when there is as number of weeks subtracted and produces the correct date as a return value.
Proof of test code	<pre>// can pass in date as standard date time format or as dd/mm/yyyy as type string // objectContainingTheAddingToMake should be type object can be a negative number to subtract days // objectContainingTheAddingToMake: examples: {days : 6} or {months: 9} or {years : 9} // can even do any combination: examples: {days : 7, months : 9} or {days : 8, months: 9, years : 2} static subtractFromDate (date, objectContainingTheSubtractionsToMake) { // if date is in dd/mm/yyyy format it gets changed into the standard date time format the moment. date = this[_ddmmyyyyToStandardDateTimeCheck] (date); // uses the moment library to make relevant changes to the date. The result then gets formatted to // date format by using the .format() return moment(date).subtract(objectContainingTheSubtractionsToMake).format(); }</pre>

Test data	<pre>console.log(DateHandler.subtractFromDate("21/10/2010", {weeks: 3}));</pre>
Code execution	
Pass/ Fail	Pass

Test	* Test that the system is able to handle when there is as number of months subtracted and produces the correct date as a return value.
Proof of test code	<pre>// can pass in date as standard date time format or as dd/mm/yyyy as type string // objectContainingTheAddingToMake should be type object can be a negative number to subtract days // objectContainingTheAddingToMake: examples: {days : 6} or {months: 9} or {years : 9} // can even do any combination: examples: {days : 7, months : 9} or {days : 8, months: 9, years : 2} static subtractFromDate (date, objectContainingTheSubtractionsToMake) { // if date is in dd/mm/yyyy format it gets changed into the standard date time format the moment. date = this[_ddmmyyyyToStandardDateTimeCheck] (date); // uses the moment library to make relevant changes to the date. The result then gets formatted to // date format by using the .format() return moment(date).subtract(objectContainingTheSubtractionsToMake).format(); }</pre>
Test data	<pre>console.log(DateHandler.subtractFromDate("21/10/2010", {months: 13}));</pre>
Code execution	
Pass/ Fail	Pass

CSVHandler Class

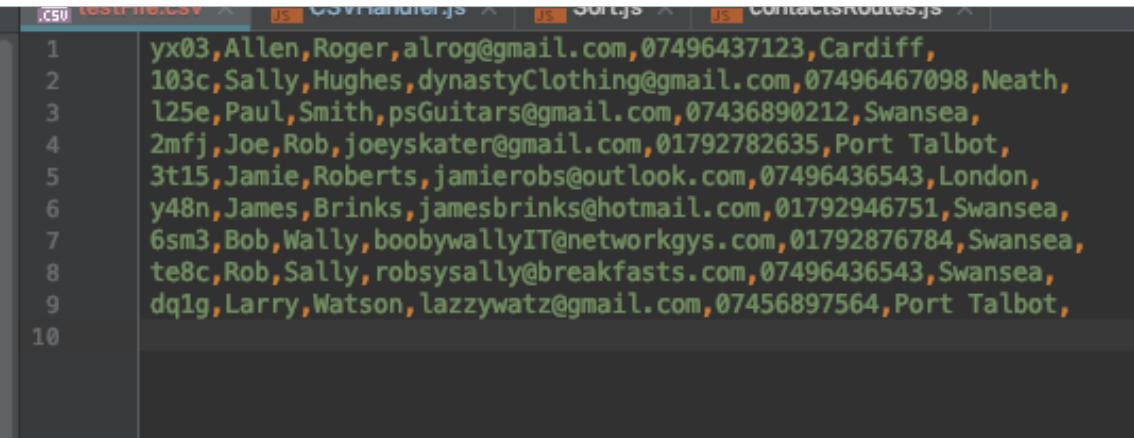
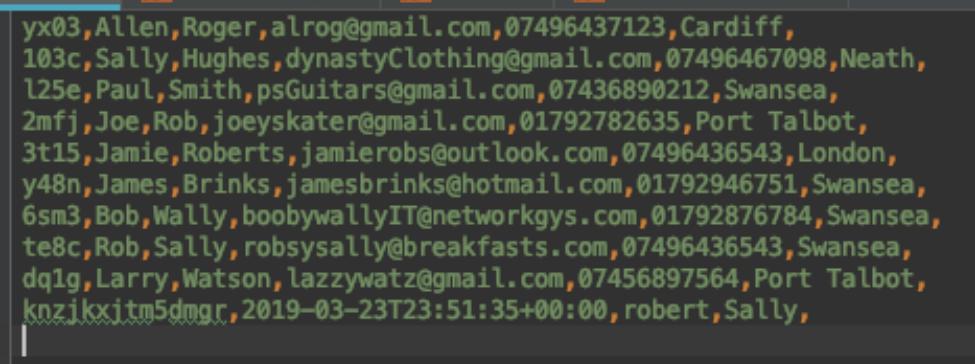
csvToArray — used to turn a csv file into a 2D array (interfaces with csv files)

Test	* Test that the system is able to turn all of the records in the csv file into elements of the array
Proof of test code	<pre>// will put a txt file that is in a csv format into a 2d array and return it [_csvToArray]() { let file = fs.readFileSync(this[_FILE_PATH], 'utf8'); let recordsArray = file.split("\n"); let csvInArray = []; // there is an empty array element at the end of each record // in this loop every record has the empty element removed and the rest of the // array gets put back into the csvInArray array. for (let i = 0; i < recordsArray.length; i++) { let singleRecordArray = recordsArray[i].split(","); singleRecordArray.pop(); // gets rid of the empty last element in the array csvInArray.push(singleRecordArray); } return csvInArray; }</pre>
Test data (csv file)	<pre>1 yx03,Allen,Roger,alrog@gmail.com,07496437123,Cardiff, 2 103c,Sally,Hughes,dynastyClothing@gmail.com,07496467098,Neath, 3 l25e,Paul,Smith,psGuitars@gmail.com,07436890212,Swansea, 4 2mfj,Joe,Rob,joeyskater@gmail.com,01792782635,Port Talbot, 5 3t15,Jamie,Roberts,jamierobs@outlook.com,07496436543,London, 6 y48n,James,Brinks,jamesbrinks@hotmail.com,01792946751,Swansea, 7 6sm3,Bob,Wally,boobywallyIT@networkgys.com,01792876784,Swansea, 8 te8c,Rob,Sally,robsysally@breakfasts.com,07496436543,Swansea, 9 dq1g,Larry,Watson,lazzywatz@gmail.com,07456897564,Port Talbot, 10 </pre>
Initialising code	<pre>let file = new CSVHandler("testFile.csv"); console.log(file[_csvToArray]());</pre>

Code execution	<pre>[['yx03', 'Allen', 'Roger', 'alrog@gmail.com', '07496437123', 'Cardiff'], ['103c', 'Sally', 'Hughes', 'dynastyClothing@gmail.com', '07496467098', 'Neath'], ['l25e', 'Paul', 'Smith', 'psGuitars@gmail.com', '07436890212', 'Swansea'], ['2mfj', 'Joe', 'Rob', 'joeyskater@gmail.com', '01792782635', 'Port Talbot'], ['3t15', 'Jamie', 'Roberts', 'jamierobs@outlook.com', '07496436543', 'London'], ['y48n', 'James', 'Brinks', 'jamesbrinks@hotmail.com', '01792946751', 'Swansea'], ['6sm3', 'Bob', 'Wally', 'boobywallyIT@networkgys.com', '01792876784', 'Swansea'], ['te8c', 'Rob', 'Sally', 'robsysally@breakfasts.com', '07496436543', 'Swansea'], ['dq1g', 'Larry', 'Watson', 'lazzywatz@gmail.com', '07456897564', 'Port Talbot'], []]</pre> <p>Process finished with exit code 0</p>
Pass/ Fail	Pass

addRecord — used to add a record to a csv file (interfaces with a csv file)

Test	* Test that a record gets added with an id and a time stamp to the csv file when the function is run with the valid inputs
Proof of test code	<pre> // The generateUniqueID variable will make this a polymorphic method as it will run different // the argument that gets passed for it. // the data argument should be an array of all the data contained in a record addRecord(data, generateUniqueID, noTimeInTimeStamp) { // no time in time stamp allows the let arrayOfRecords = this[_csvToArray](); let arrayHolder = []; let currentDateTime; if (generateUniqueID === undefined) { generateUniqueID = true; } if (generateUniqueID) { // generate the unique id, has to be declared down here so it does not // interfere with the UniqueIdGenerator class when it accesses the // addRecord method const ID = this[_generateID](); // generates a unique id value if (noTimeInTimeStamp === true) { // sets appropriate date time stamp dependent on currentDateTime = DateHandler.getCurrentDate(); } else { currentDateTime = DateHandler.getCurrentDateTime(); } let recordWithDateStampAndID = [ID, currentDateTime]; // add record data.forEach((field) => { recordWithDateStampAndID.push(field); }); arrayOfRecords.splice(arrayOfRecords.length - 1); arrayOfRecords.push(recordWithDateStampAndID); // console.log(arrayOfRecords); this[_rewriteDataToFileWithChanges](arrayOfRecords); } // used by the unique id generator private method else { arrayOfRecords.pop(); arrayHolder.push(data); // takes the 2D array 'arrayOfRecords' and appends the new record to the end of it arrayOfRecords.push(arrayHolder); // rewrite the array of records with the appended record to the file this[_rewriteDataToFileWithChanges](arrayOfRecords); } } </pre>

Test data (csv file before)	
Initialising code	<pre>let file = new CSVHandler("testFile.csv"); file.addRecord(["robert", "Sally"]);</pre>
Console output	N/a
After code execution (csv file after)	
Pass/ Fail	Pass

Test	<p>* Test how the function interfaces with the csv file when there is a comma in the input.</p> <p>The file should just separate all the values with commas between them even if the commas are in a single array item</p>
Proof of test code	<pre>// The generateUniqueID variable will make this a polymorphic method as it will run different // the argument that gets passed for it. // the data argument should be an array of all the data contained in a record addRecord(data, generateUniqueID, noTimeInTimeStamp) { // no time in time stamp allows the let arrayOfRecords = this[_csvToArray](); let arrayHolder = []; let currentDateTime; if (generateUniqueID === undefined) { generateUniqueID = true; } if (generateUniqueID) { // generate the unique id, has to be declared down here so it does not // interfere with the UniqueIdGenerator class when it accesses the // addRecord method const ID = this[_generateID](); // generates a unique id value if (noTimeInTimeStamp === true) { // sets appropriate date time stamp dependent on currentDateTime = DateHandler.getCurrentDate(); } else { currentDateTime = DateHandler.getCurrentDateTime(); } let recordWithDateStampAndID = [ID, currentDateTime]; // add record data.forEach((field) => { recordWithDateStampAndID.push(field); }); arrayOfRecords.splice(arrayOfRecords.length - 1); arrayOfRecords.push(recordWithDateStampAndID); // console.log(arrayOfRecords); this[_rewriteDataToFileWithChanges](arrayOfRecords); } // used by the unique id generator private method else { arrayOfRecords.pop(); arrayHolder.push(data); // takes the 2D array 'arrayOfRecords' and appends the new record to the end of it arrayOfRecords.push(arrayHolder); // rewrite the array of records with the appended record to the file this[_rewriteDataToFileWithChanges](arrayOfRecords); } }</pre>

Test data (csv file before)	<pre>yx03,Allen,Roger,alrog@gmail.com,07496437123,Cardiff, 103c,Sally,Hughes,dynastyClothing@gmail.com,07496467098,Neath, l25e,Paul,Smith,psGuitars@gmail.com,07436890212,Swansea, 2mfj,Joe,Rob,joeyskater@gmail.com,01792782635,Port Talbot, 3t15,Jamie,Roberts,jamierobs@outlook.com,07496436543,London, y48n,James,Brinks,jamesbrinks@hotmail.com,01792946751,Swansea, 6sm3,Bob,Wally,boobywallyIT@networkgys.com,01792876784,Swansea, te8c,Rob,Sally,robsysally@breakfasts.com,07496436543,Swansea, dq1g,Larry,Watson,lazzywatz@gmail.com,07456897564,Port Talbot,</pre>
Initialising code	<pre>let file = new CSVHandler("testFile.csv"); file.addRecord(["tom,my", "paul"]);</pre>
Console output	N/a
After code execution (csv file after)	<pre>yx03,Allen,Roger,alrog@gmail.com,07496437123,Cardiff, 103c,Sally,Hughes,dynastyClothing@gmail.com,07496467098,Neath, l25e,Paul,Smith,psGuitars@gmail.com,07436890212,Swansea, 2mfj,Joe,Rob,joeyskater@gmail.com,01792782635,Port Talbot, 3t15,Jamie,Roberts,jamierobs@outlook.com,07496436543,London, y48n,James,Brinks,jamesbrinks@hotmail.com,01792946751,Swansea, 6sm3,Bob,Wally,boobywallyIT@networkgys.com,01792876784,Swansea, te8c,Rob,Sally,robsysally@breakfasts.com,07496436543,Swansea, dq1g,Larry,Watson,lazzywatz@gmail.com,07456897564,Port Talbot, knzjmfitm5hgyf,2019-03-23T23:54:47+00:00,tom,my,paul,</pre>
Pass/ Fail	Pass

deleteRecord — used to delete a record (selected by its id) from a csv file (interfaces with a csv file)

Test	* Test that a middle record in the csv file when referenced by its ID gets removed from the csv file. (typical) the record specified by it's id should get removed
Proof of test code	<pre>deleteRecord(id) { let arrayOfRecords = Sort.bubbleSort2D(this[_csvToArray](), 0); arrayOfRecords.splice(arrayOfRecords.length - 1); //exception handling so program doesn't crash if the delete was not possible try{ arrayOfRecords.splice(Search.binarySearch2D(arrayOfRecords, [0], id[0].index, 1)); // deletes } catch(e){ console.error(`record was not able to be deleted: check record with that id \${id} exists\n`); console.error(e) } // arrayOfRecords is parsed back into the file without // the record with the id passed as argument // unless the record was not able to be deleted, then all // records will get parsed back into the original csv file this[_rewriteDataToFileWithChanges](arrayOfRecords); }</pre>

Test data (csv file before)	<pre>yx03,Allen,Roger,alrog@gmail.com,07496437123,Cardiff, 103c,Sally,Hughes,dynastyClothing@gmail.com,07496467098,Neath, l25e,Paul,Smith,psGuitars@gmail.com,07436890212,Swansea, 2mfj,Joe,Rob,joeyskater@gmail.com,01792782635,Port Talbot, 3t15,Jamie,Roberts,jamierobs@outlook.com,07496436543,London, y48n,James,Brinks,jamesbrinks@hotmail.com,01792946751,Swansea, 6sm3,Bob,Wally,boobywallyIT@networkgys.com,01792876784,Swansea, te8c,Rob,Sally,robsysally@breakfasts.com,07496436543,Swansea, dq1g,Larry,Watson,lazzywatz@gmail.com,07456897564,Port Talbot,</pre>
Initialising code	<pre>let file = new CSVHandler("testFile.csv"); file.deleteRecord('2mfj');</pre>
Console output	N/a
After code execution (csv file after)	<pre>103c,Sally,Hughes,dynastyClothing@gmail.com,07496467098,Neath, 3t15,Jamie,Roberts,jamierobs@outlook.com,07496436543,London, 6sm3,Bob,Wally,boobywallyIT@networkgys.com,01792876784,Swansea, dq1g,Larry,Watson,lazzywatz@gmail.com,07456897564,Port Talbot, l25e,Paul,Smith,psGuitars@gmail.com,07436890212,Swansea, te8c,Rob,Sally,robsysally@breakfasts.com,07496436543,Swansea, y48n,James,Brinks,jamesbrinks@hotmail.com,01792946751,Swansea, yx03,Allen,Roger,alrog@gmail.com,07496437123,Cardiff,</pre>
Pass/ Fail	Pass

Test	* Test that the last record in the csv file when referenced by its ID gets removed from the csv file. (typical) the record specified by it's id should get removed
Proof of test code	<pre>deleteRecord(id) { let arrayOfRecords = Sort.bubbleSort2D(this[_csvToArray](), 0); arrayOfRecords.splice(arrayOfRecords.length - 1); //exception handling so program doesn't crash if the delete was not possible try{ arrayOfRecords.splice(Search.binarySearch2D(arrayOfRecords, [0], id[0].index, 1)); // deletes } catch(e){ console.error(`record was not able to be deleted: check record with that id \${id} exists\n`); console.error(e) } // arrayOfRecords is parsed back into the file without // the record with the id passed as argument // unless the record was not able to be deleted, then all // records will get parsed back into the original csv file this[_rewriteDataToFileWithChanges](arrayOfRecords); }</pre>

Test data (csv file before)	<pre>yx03,Allen,Roger,alrog@gmail.com,07496437123,Cardiff, 103c,Sally,Hughes,dynastyClothing@gmail.com,07496467098,Neath, 125e,Paul,Smith,psGuitars@gmail.com,07436890212,Swansea, 2mfj,Joe,Rob,joeyskater@gmail.com,01792782635,Port Talbot, 3t15,Jamie,Roberts,jamierobs@outlook.com,07496436543,London, y48n,James,Brinks,jamesbrinks@hotmail.com,01792946751,Swansea, 6sm3,Bob,Wally,boobywallyIT@networkgys.com,01792876784,Swansea, te8c,Rob,Sally,robsysally@breakfasts.com,07496436543,Swansea, dq1g,Larry,Watson,lazzywatz@gmail.com,07456897564,Port Talbot,</pre>
Initialising code	<pre>let file = new CSVHandler("testFile.csv"); file.deleteRecord('dq1g');</pre>
Console output	N/a
After code execution (csv file after)	<pre>1 103c,Sally,Hughes,dynastyClothing@gmail.com,07496467098,Neath, 2 2mfj,Joe,Rob,joeyskater@gmail.com,01792782635,Port Talbot, 3 3t15,Jamie,Roberts,jamierobs@outlook.com,07496436543,London, 4 6sm3,Bob,Wally,boobywallyIT@networkgys.com,01792876784,Swansea, 5 125e,Paul,Smith,psGuitars@gmail.com,07436890212,Swansea, 6 te8c,Rob,Sally,robsysally@breakfasts.com,07496436543,Swansea, 7 y48n,James,Brinks,jamesbrinks@hotmail.com,01792946751,Swansea, 8 yx03,Allen,Roger,alrog@gmail.com,07496437123,Cardiff, 9 </pre>
Pass/ Fail	Pass

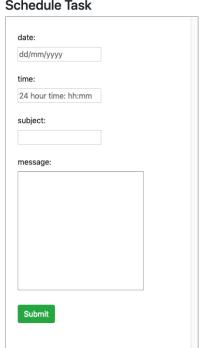
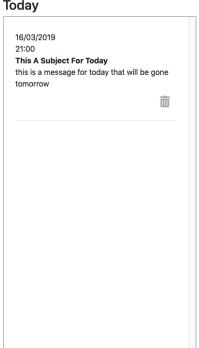
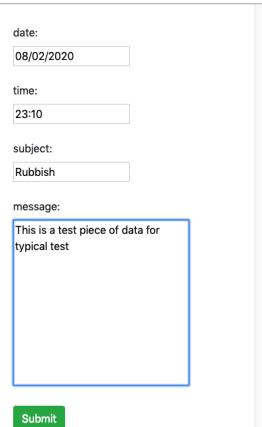
Test	* Test that the system is able to handle when an id is given to the function that doesn't exist. No records should get removed. (erroneous)
Proof of test code	<pre>deleteRecord(id) { let arrayOfRecords = Sort.bubbleSort2D(this[_csvToArray](), 0); arrayOfRecords.splice(arrayOfRecords.length - 1); //exception handling so program doesn't crash if the delete was not possible try{ arrayOfRecords.splice(Search.binarySearch2D(arrayOfRecords, [0], id)[0].index, 1); // deletes } catch(e) { console.error(`record was not able to be deleted: check record with that id \${id} exists\n`); console.error(e) } // arrayOfRecords is parsed back into the file without // the record with the id passed as argument // unless the record was not able to be deleted, then all // records will get parsed back into the original csv file this[_rewriteDataToFileWithChanges](arrayOfRecords); }</pre>

Test data (csv file before)	<pre>yx03,Allen,Roger,alrog@gmail.com,07496437123,Cardiff, 103c,Sally,Hughes,dynastyClothing@gmail.com,07496467098,Neath, l25e,Paul,Smith,psGuitars@gmail.com,07436890212,Swansea, 2mfj,Joe,Rob,joeyskater@gmail.com,01792782635,Port Talbot, 3t15,Jamie,Roberts,jamierobs@outlook.com,07496436543,London, y48n,James,Brinks,jamesbrinks@hotmail.com,01792946751,Swansea, 6sm3,Bob,Wally,boobywallyIT@networkgys.com,01792876784,Swansea, te8c,Rob,Sally,robsysally@breakfasts.com,07496436543,Swansea, dq1g,Larry,Watson,lazzywatz@gmail.com,07456897564,Port Talbot,</pre>
Initialising code	<pre>let file = new CSVHandler("testFile.csv"); file.deleteRecord('aaaaa');</pre>
Console output	N/a
After code execution (csv file after)	<pre>1 103c,Sally,Hughes,dynastyClothing@gmail.com,07496467098,Neath, 2 2mfj,Joe,Rob,joeyskater@gmail.com,01792782635,Port Talbot, 3 3t15,Jamie,Roberts,jamierobs@outlook.com,07496436543,London, 4 6sm3,Bob,Wally,boobywallyIT@networkgys.com,01792876784,Swansea, 5 dq1g,Larry,Watson,lazzywatz@gmail.com,07456897564,Port Talbot, 6 l25e,Paul,Smith,psGuitars@gmail.com,07436890212,Swansea, 7 te8c,Rob,Sally,robsysally@breakfasts.com,07496436543,Swansea, 8 y48n,James,Brinks,jamesbrinks@hotmail.com,01792946751,Swansea, 9 yx03,Allen,Roger,alrog@gmail.com,07496437123,Cardiff, 10</pre>
Pass/ Fail	Pass

System Testing

Dashboard Page

Add Scheduled task

Test	<ul style="list-style-type: none"> * Test to see if it adds data to the csv file that is storing the scheduled data when there is valid data inputted (future date in format dd/mm/yyyy and a valid time with a subject and message without any characters other than numbers and alphabetical characters) it should also output the data to the future tasks list
Before	<p>Dashboard</p> <p>Schedule Task</p>  <p>Today</p>  <p>Future</p> 
Data being inputted	<p>Dashboard</p> <p>Schedule Task</p> 

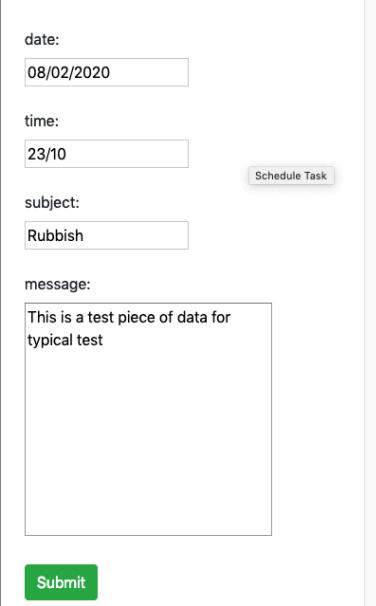
Data outputted	<p>Today</p> <p>16/03/2019 21:00 This A Subject For Today this is a message for today that will be gone tomorrow</p> 	<p>Future</p> <p>08/02/2020 23:10 Rubbish This is a test piece of data for typical test</p> 
Pass/ Fail	Pass	

Test	<ul style="list-style-type: none"> * Test to see if it adds data to the csv file that is storing the scheduled data when there is valid data inputted (current date in format dd/mm/yyyy and a valid future time with a subject and message without any characters other than numbers and alphabetical characters) it should also output the data to the todays tasks list 	
Before	<p>Today</p> <p>16/03/2019 21:00 This A Subject For Today this is a message for today that will be gone tomorrow</p> 	<p>Future</p> <p>08/02/2020 23:10 Rubbish This is a test piece of data for typical test</p> 

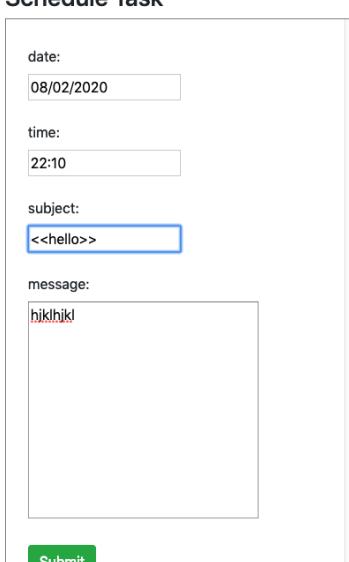
Data being inputted	<p>Dashboard</p> <p>Schedule Task</p> <div style="border: 1px solid #ccc; padding: 10px;"> <p>date: 16/03/2019</p> <p>time: 23:10</p> <p>subject: this is another schedule</p> <p>message: This schedule will be for today only and will be used for a typical test</p> </div> <p>Submit</p>
Data outputted	<p>Today</p> <div style="border: 1px solid #ccc; padding: 10px;"> <p>16/03/2019 21:00 This A Subject For Today this is a message for today that will be gone tomorrow</p> <p>16/03/2019 23:10 This Is Another Schedule This schedule will be for today only and will be used for a typical test</p> </div>
Pass/ Fail	Pass
Test	<ul style="list-style-type: none"> * Test to see if an appropriate validation message gets displayed when the date is inputted not in the format dd/mm/yyyy but everything else inputted is valid. There should also be nothing added to the csv file holding the schedule data.
Data being inputted	<p>Schedule Task</p> <div style="border: 1px solid #ccc; padding: 10px;"> <p>date: 16/03/19</p> <p>time: 21:00</p> <p>subject: This A Subject For Tod</p> <p>message: this is a message for today that will be gone tomorrow</p> </div> <p>Submit</p>

Data outputted	<p style="text-align: center;"><u>___ Please Ensure The Date Is In The Format dd/mm/yyyy And The Date Is In The Future Or Today's Date ___</u></p> <h2>Dashboard</h2> <p>Schedule Task Today</p>
Pass/ Fail	Pass

Test	* Test to see if an appropriate validation message gets displayed when the date is inputted in the correct format but is a date in the past, everything else inputted is valid. There should also be nothing added to the csv file holding the schedule data.
Data being inputted	<p>Schedule Task</p> <div style="border: 1px solid black; padding: 10px;"> <p>date: <input type="text" value="16/03/2018"/></p> <p>time: <input type="text" value="21:00"/></p> <p>subject: <input type="text" value="This Is Another Schedu"/></p> <p>message: <input type="text" value="this is a message for today that will be gone tomorrow"/></p> <p style="text-align: right;">Submit</p> </div>
Data outputted	<p style="text-align: center;"><u>___ Please Ensure The Date Is In The Format dd/mm/yyyy And The Date Is In The Future Or Today's Date ___</u></p> <h2>Dashboard</h2> <p>Schedule Task Today</p>

Pass/ Fail	Pass	
Test	* Test to see if an appropriate validation message gets displayed when the date is inputted not in the format hh:mm but everything else inputted is valid. There should be nothing added to the csv file holding the schedule data.	
Data being inputted	<p>Schedule Task</p> 	
Data outputted	<p>___ Please Ensure The Time Is In The Format hh:mm Use The 24hr Clock ___</p> <h1>Dashboard</h1> <p>Schedule Task</p> <table border="1"> <tr> <td>Today</td> </tr> </table>	Today
Today		
Pass/ Fail	Pass	

Test	* Test to see if an appropriate validation message gets displayed when the time is inputted in the correct format but is a time that doesn't exist (25:00), everything else inputted is valid. There should also be nothing added to the csv file holding the schedule data.
Data being inputted	<h2>Schedule Task</h2> <p>date:</p> <input type="text" value="08/02/2020"/> <p>time:</p> <input type="text" value="25:00"/> <p>subject:</p> <input type="text" value="Rubbish"/> <p>message:</p> <div style="border: 2px solid blue; padding: 5px;"> This is a test piece of data for typical test </div> <p>Submit</p>
Data outputted	<p style="background-color: #f8d7da; border-radius: 5px; padding: 5px; text-align: center;">____ Please Ensure The Time Is In The Format hh:mm Use The 24hr Clock ____</p> <h2>Dashboard</h2>
Pass/ Fail	Pass

Test	* Test to see if an appropriate validation message gets displayed when the subject is inputted with characters other than the alphabetical and numerical characters. Everything else should be a valid input. There should be nothing added to the csv file holding the schedule data.
Data being inputted	<p>Dashboard</p> <p>Schedule Task</p> 
Data outputted	<p>____ Ensure That The subject and the message Values Contain a-z, A-Z , And 0-9 Characters ____</p> <p>Dashboard</p> <p>Schedule Task</p> <p>Today</p>
Pass/ Fail	Pass

Delete Scheduled task

Test	* Test to see if it deletes data from the csv file that is storing the scheduled data when the delete button is clicked on a task for the current date
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	<p>Before</p> <p>Today</p> <p>17/03/2019 15:30 Today Scheduling this was made to get deleted</p> <p></p>	<p>Future</p> <p>08/02/2020 23:10 Rubbish This is a test piece of data for typical test</p> <p></p> <p>21/10/2020 21:00 hello hjklhjkl</p> <p></p>
After	<p>Successfully Deleted A Scheduled Task</p> <p>Dashboard</p> <p>Schedule Task</p> <p>date: <input type="text" value="dd/mm/yyyy"/></p> <p>time: <input type="text" value="24 hour time: hh:mm"/></p> <p>subject: <input type="text"/></p> <p>message: <input type="text"/></p> <p>Today</p> <p>Future</p> <p>08/02/2020 23:10 Rubbish This is a test piece of data for typical test</p> <p></p> <p>21/10/2020 21:00 hello hjklhjkl</p> <p></p>	
Pass/ Fail	Pass	

Test	<p>* Test to see if it deletes data from the csv file that is storing the scheduled data when the delete button is clicked on a task for the future date</p>		
Before	<p>Today</p> <p>Future</p>		
After	<p>Successfully Deleted A Scheduled Task</p> <p>Dashboard</p> <p>Schedule Task</p> <p>date: <input type="text"/></p> <p>time: <input type="text"/></p> <p>subject: <input type="text"/></p> <p>message: <input type="text"/></p> <p>Today</p> <p>Future</p>		
Pass/ Fail	Pass		

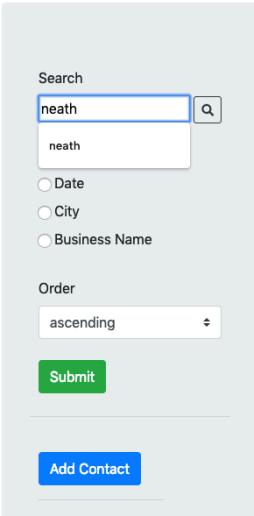
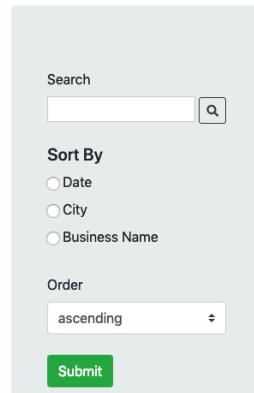
Contacts List Page

Search For Contacts

Test	Search for a contact by first name in the contacts list where there are multiple records that contain that search value. All the contacts that meet the search criteria should get returned to the list (typical)
------	---

Before	<h3>Contacts List</h3> <div style="border: 1px solid #ccc; padding: 10px;"> <p>Search <input type="text" value="rob"/> <input type="button" value=""/></p> <p>Sort By <input type="radio"/> Date <input type="radio"/> City <input type="radio"/> Business Name</p> <p>Order <input type="button" value="ascending"/></p> <p><input type="button" value="Submit"/></p> <hr/> <p><input type="button" value="Add Contact"/></p> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Name</th><th>Business</th><th>City</th><th>Email</th></tr> </thead> <tbody> <tr><td>Kieran Williams</td><td>The Work Place</td><td>Swansea</td><td>kieranmarcus@me.co</td></tr> <tr><td>Bobby Walley</td><td>Th3 Network Guyz</td><td>Neath</td><td>boobywallyIT@netwo</td></tr> <tr><td>Allen Roger</td><td>BigMerch</td><td>Cardiff</td><td>alrog@gmail.com</td></tr> <tr><td>Sally Hughes</td><td>Dynasty</td><td>Neath</td><td>dynastyClothing@gm</td></tr> <tr><td>Paul Smith</td><td>Paulsmith Guitars</td><td>Swansea</td><td>psGuitars@gmail.co</td></tr> <tr><td>Joe Rob</td><td>Joe Skate</td><td>Port Talbot</td><td>joeyskater@gmail.co</td></tr> <tr><td>Jamie Roberts</td><td>Big Breakfasts 4 You</td><td>London</td><td>jamierobs@outlook.co</td></tr> <tr><td>James Brinks</td><td>James Media</td><td>Swansea</td><td>jamesbrinks@hotmail.co</td></tr> <tr><td>Bob Wally</td><td>The Network Guys</td><td>Swansea</td><td>boobywallyIT@netwo</td></tr> <tr><td>Rob Sally</td><td>Breakfasts U Want</td><td>Swansea</td><td>robsally@breakfas</td></tr> <tr><td>Larry Watson</td><td>Dig Dig Diggers</td><td>Port Talbot</td><td>lazzywatz@gmail.co</td></tr> </tbody> </table>	Name	Business	City	Email	Kieran Williams	The Work Place	Swansea	kieranmarcus@me.co	Bobby Walley	Th3 Network Guyz	Neath	boobywallyIT@netwo	Allen Roger	BigMerch	Cardiff	alrog@gmail.com	Sally Hughes	Dynasty	Neath	dynastyClothing@gm	Paul Smith	Paulsmith Guitars	Swansea	psGuitars@gmail.co	Joe Rob	Joe Skate	Port Talbot	joeyskater@gmail.co	Jamie Roberts	Big Breakfasts 4 You	London	jamierobs@outlook.co	James Brinks	James Media	Swansea	jamesbrinks@hotmail.co	Bob Wally	The Network Guys	Swansea	boobywallyIT@netwo	Rob Sally	Breakfasts U Want	Swansea	robsally@breakfas	Larry Watson	Dig Dig Diggers	Port Talbot	lazzywatz@gmail.co
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Test	Search for a contacts by typing in a city where there is a match for at least one contact with that search value. (typical)
------	---

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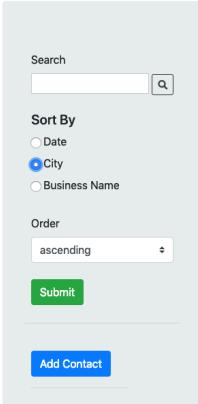
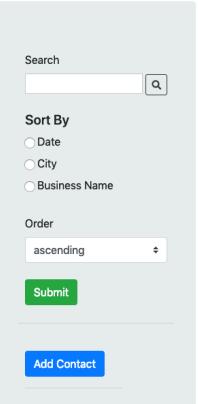
Test	Search for a contact by first name where there is only one contact that meets the criteria for that search value. That contact should be the only contact in the contacts list. (extreme)
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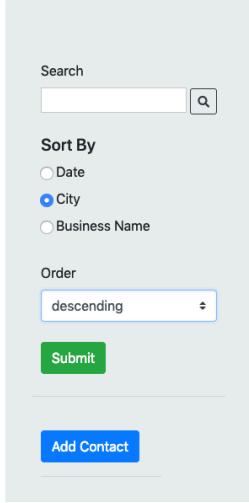
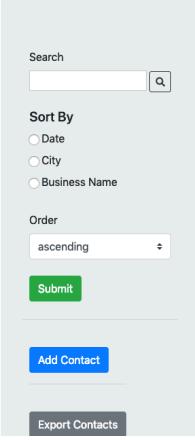
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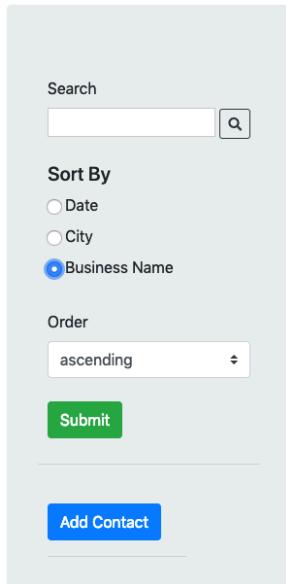
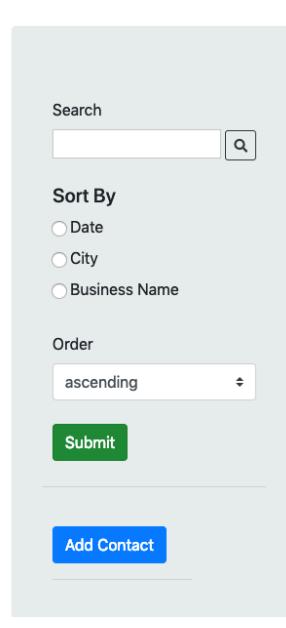
Test	<ul style="list-style-type: none"> * Enter a search value where none of the contacts in the contacts list have that value in their record. Nothing should get returned to the contacts list or all the contacts should get returned to the contacts list but there should also be a message to let the user know that no matches were found (erroneous)
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Before	<h2>Contacts List</h2> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Search</p> <input type="text" value="qwerty"/> 🔍 </div><div style="width: 50%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Name</th><th>Business</th></tr> </thead> <tbody> <tr><td>Kieran Williams</td><td>The Work Place</td></tr> <tr><td>Bobby Walley</td><td>Th3 Network Guyz</td></tr> <tr><td>Allen Roger</td><td>BigMerch</td></tr> <tr><td>Sally Hughes</td><td>Dynasty</td></tr> <tr><td>Paul Smith</td><td>Paulsmith Guitars</td></tr> <tr><td>Joe Rob</td><td>Joe Skate</td></tr> <tr><td>Jamie Roberts</td><td>Big Breakfasts 4 You</td></tr> <tr><td>James Brinks</td><td>James Media</td></tr> <tr><td>Bob Wally</td><td>The Network Guys</td></tr> <tr><td>Rob Sally</td><td>Breakfasts U Want</td></tr> <tr><td>Larry Watson</td><td>Dig Dig Diggers</td></tr> </tbody> </table> </div></div> <p>Sort By</p> <p><input type="radio"/> Date <input type="radio"/> City <input type="radio"/> Business Name</p> <p>Order</p> <p>ascending</p> <p>Submit</p> <p>Add Contact</p> <p>Export Contacts</p>	Name	Business	Kieran Williams	The Work Place	Bobby Walley	Th3 Network Guyz	Allen Roger	BigMerch	Sally Hughes	Dynasty	Paul Smith	Paulsmith Guitars	Joe Rob	Joe Skate	Jamie Roberts	Big Breakfasts 4 You	James Brinks	James Media	Bob Wally	The Network Guys	Rob Sally	Breakfasts U Want	Larry Watson	Dig Dig Diggers																																				
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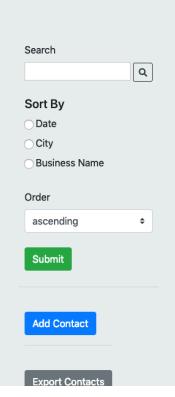
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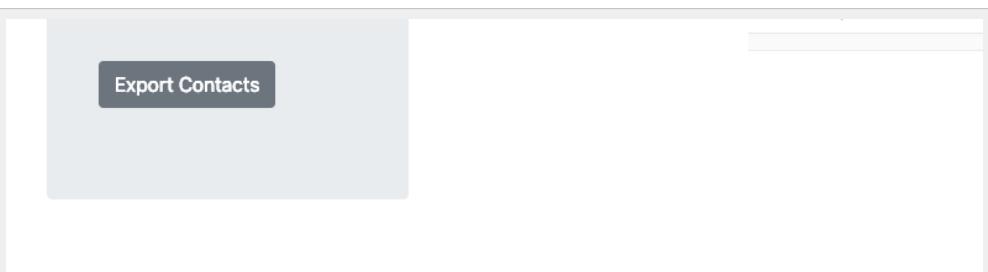
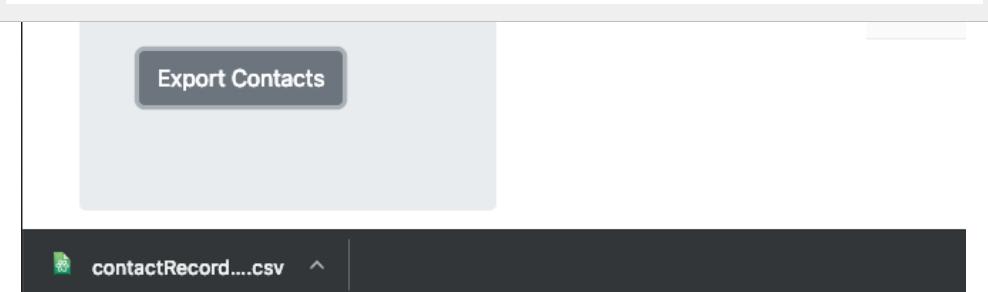
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Test	* Sort contacts with no criteria entered in ascending order. Contacts should get retuned in the order of their first name as that is the first field in the contacts list display (erroneous)
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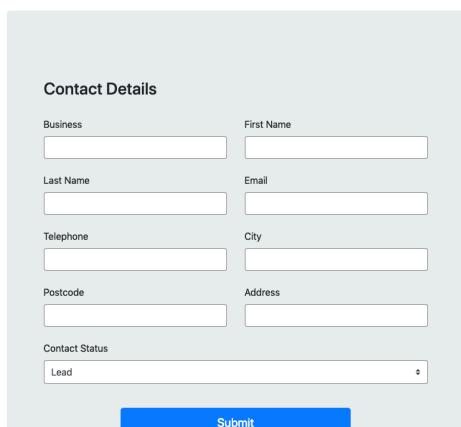
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Export contacts

Test	* Click the export contacts button. Should download the contacts csv file to the user's computer. The entire contacts csv file store should get exported to the user
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Add contact

Test	Try to add a contact without entering any data into the text fields
What happens from clicking submit without entering any data:	<p>KW CRM Dashboard Contacts Analytics Settings</p> <p>Please Ensure All Text Fields Have Data Entered _____ Please Ensure The Telephone Length Is 11 Characters Long _____ Ensure That The Business Name Field Is Within Range Of 1 - 25 Characters _____ Ensure That The First Name Field Is Within Range Of 1 - 15 Characters _____ Ensure That The Last Name Field Is Within Range Of 1 - 15 Characters _____ Ensure That The Email Field Is Within Range Of 4 - 30 Characters _____ Ensure That The City Field Is Within Range Of 1 - 15 Characters _____ Ensure That The Post Code Field Is Within Range Of 4 - 12 Characters _____ Ensure That The Address Field Is Within Range Of 1 - 30 Characters _____ Please Ensure The Email Is Valid _____</p> <p>Create Contact</p>  <p>The screenshot shows a 'Contact Details' form with several validation errors displayed at the top. The errors are: 'Please Ensure All Text Fields Have Data Entered _____', 'Please Ensure The Telephone Length Is 11 Characters Long _____', 'Ensure That The Business Name Field Is Within Range Of 1 - 25 Characters _____', 'Ensure That The First Name Field Is Within Range Of 1 - 15 Characters _____', 'Ensure That The Last Name Field Is Within Range Of 1 - 15 Characters _____', 'Ensure That The Email Field Is Within Range Of 4 - 30 Characters _____', 'Ensure That The City Field Is Within Range Of 1 - 15 Characters _____', 'Ensure That The Post Code Field Is Within Range Of 4 - 12 Characters _____', 'Ensure That The Address Field Is Within Range Of 1 - 30 Characters _____', and 'Please Ensure The Email Is Valid _____'. Below the errors, there is a 'Create Contact' button.</p>
What is the test at the top:	The text at the top is all the validation messages being printed all at once
Pass/ Fail	Pass

Test	* Try to add a contact with all valid data but with a name extensively long																				
Before	<p>Contact Details</p> <table> <tbody> <tr> <td>Business</td> <td>First Name</td> </tr> <tr> <td>bright bricks media</td> <td>kieranasdflghjkasdf</td> </tr> <tr> <td>Last Name</td> <td>Email</td> </tr> <tr> <td>williams</td> <td>kwtest@gmail.com</td> </tr> <tr> <td>Telephone</td> <td>City</td> </tr> <tr> <td>01792782635</td> <td>Swansea</td> </tr> <tr> <td>Postcode</td> <td>Address</td> </tr> <tr> <td>sa84nw</td> <td>28 blah blah road</td> </tr> <tr> <td>Contact Status</td> <td></td> </tr> <tr> <td>Lead</td> <td></td> </tr> </tbody> </table> <p>Submit</p>	Business	First Name	bright bricks media	kieranasdflghjkasdf	Last Name	Email	williams	kwtest@gmail.com	Telephone	City	01792782635	Swansea	Postcode	Address	sa84nw	28 blah blah road	Contact Status		Lead	
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Kieran Marcus Williams

After	<p style="background-color: #f08080; padding: 5px;">____ Ensure That The First Name Field Is Within Range Of 1 - 15 Characters ____</p> <p>Create Contact</p> <div style="background-color: #e0e0e0; padding: 10px; border-radius: 5px;"> <p style="text-align: center;">Contact Details</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Business</td><td style="width: 50%;">First Name</td></tr> <tr> <td><input type="text" value="Bright Bricks Media"/></td><td><input type="text" value="Kieranasdghjkasdf"/></td></tr> </table> </div>	Business	First Name	<input type="text" value="Bright Bricks Media"/>	<input type="text" value="Kieranasdghjkasdf"/>
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<input type="text" value="Bright Bricks Media"/>	<input type="text" value="Kieranasdghjkasdf"/>				
Pass/ Fail	Pass				

Test	<ul style="list-style-type: none"> * Try to add a contact with characters other than alphabetical and numerical data in one of the text fields. 																				
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Pass/ Fail	Pass																				

Test	* Try to add a contact with the telephone number greater than 11 characters																					
Before	<p>Contact Details</p> <table> <tbody> <tr> <td>Business</td> <td>First Name</td> </tr> <tr> <td>Bright Bricks Media</td> <td>Kieran</td> </tr> <tr> <td>Last Name</td> <td>Email</td> </tr> <tr> <td>Williams</td> <td>kwtest@gmail.com</td> </tr> <tr> <td>Telephone</td> <td>City</td> </tr> <tr> <td>017112782635</td> <td>Swansea</td> </tr> <tr> <td>Postcode</td> <td>Address</td> </tr> <tr> <td>sa84nw</td> <td>28 Blah Blah Road</td> </tr> <tr> <td>Contact Status</td> <td></td> </tr> <tr> <td>Lead</td> <td></td> </tr> </tbody> </table>		Business	First Name	Bright Bricks Media	Kieran	Last Name	Email	Williams	kwtest@gmail.com	Telephone	City	017112782635	Swansea	Postcode	Address	sa84nw	28 Blah Blah Road	Contact Status		Lead	
Business	First Name																					
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017112782635	Swansea																					
Postcode	Address																					
sa84nw	28 Blah Blah Road																					
Contact Status																						
Lead																						
After	<p style="background-color: #f8d7da; padding: 5px;">____ Please Ensure The Telephone Length Is 11 Characters Long ____</p> <p>Create Contact</p>																					
Pass/ Fail	Pass																					

Test	* Try to add a contact with a telephone number with an alphabetical character in it	
Before	<p>Telephone</p> <p>017a2782635</p>	

Kieran Marcus Williams

After	<p style="text-align: center;"><u>_____ Please Ensure The Telephone Is Comprised Only Of Number Characters _____</u></p> <h3>Create Contact</h3> <div style="background-color: #e0e0e0; padding: 10px; border-radius: 5px;"><p style="text-align: center;">Contact Details</p><p>Business <input type="text" value="Bright Bricks Media"/></p><p>Last Name <input type="text" value="Williams"/></p><p>Telephone <input type="text" value="017a2782635"/></p></div>
Pass/ Fail	Pass

Test	* Try to add a contact with an invalid email format in the email field										
Before	<p style="text-align: center;">Contact Details</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Business <input type="text" value="Bright Bricks Media"/></td> <td style="width: 50%;">First Name <input type="text" value="Kieran"/></td> </tr> <tr> <td>Last Name <input type="text" value="williams"/></td> <td>Email <input type="text" value="kwtest2@gmail.com"/></td> </tr> <tr> <td>Telephone <input type="text" value="01792782635"/></td> <td>City <input type="text" value="Swansea"/></td> </tr> <tr> <td>Postcode <input type="text" value="sa84nw"/></td> <td>Address <input type="text" value="28 Blah Blah Road"/></td> </tr> <tr> <td>Contact Status <input type="text" value="Lead"/></td> <td></td> </tr> </table> <p style="text-align: center;">Submit</p>	Business <input type="text" value="Bright Bricks Media"/>	First Name <input type="text" value="Kieran"/>	Last Name <input type="text" value="williams"/>	Email <input type="text" value="kwtest2@gmail.com"/>	Telephone <input type="text" value="01792782635"/>	City <input type="text" value="Swansea"/>	Postcode <input type="text" value="sa84nw"/>	Address <input type="text" value="28 Blah Blah Road"/>	Contact Status <input type="text" value="Lead"/>	
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Postcode <input type="text" value="sa84nw"/>	Address <input type="text" value="28 Blah Blah Road"/>										
Contact Status <input type="text" value="Lead"/>											
After	<p style="text-align: center;"><u>_____ Please Ensure The Email Is Valid _____</u></p> <h3>Create Contact</h3> <div style="background-color: #e0e0e0; padding: 10px; border-radius: 5px;"><p style="text-align: center;">Contact Details</p><p>Business <input type="text" value="Bright Bricks Media"/></p><p>Last Name <input type="text" value="Williams"/></p><p>Telephone <input type="text" value="kwtest2@gmail.com"/></p></div>										
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Kieran Marcus Williams

Test	* Try to add a contact with all valid data																																																												
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After	<p>Successfully Created A Contact</p> <p>Contacts List</p> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p>Search <input type="text"/> <input type="button" value="q"/></p> <p>Sort By <input type="radio"/> Date <input type="radio"/> City <input type="radio"/> Business Name</p> <p>Order <input type="button" value="ascending"/> <input type="button" value="descending"/></p> <p><input type="button" value="Submit"/></p> <p><input type="button" value="Add Contact"/></p> </div> <div style="flex: 4;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Kieran Williams</th> <th>The Work Place</th> <th>Swansea</th> <th>kieranmarcus@me.com</th> <th>07989019384</th> </tr> </thead> <tbody> <tr><td>Bobby Walley</td><td>Th3 Network Guyz</td><td>Neath</td><td>boobywallyIT@networkgys.com</td><td>01987458672</td></tr> <tr><td>Allen Roger</td><td>BigMerch</td><td>Cardiff</td><td>alrog@gmail.com</td><td>07496437123</td></tr> <tr><td>Sally Hughes</td><td>Dynasty</td><td>Neath</td><td>dynastyClothing@gmail.com</td><td>07496467098</td></tr> <tr><td>Paul Smith</td><td>Paulsmith Guitars</td><td>Swansea</td><td>psGuitars@gmail.com</td><td>07436890212</td></tr> <tr><td>Joe Rob</td><td>Joe Skate</td><td>Port Talbot</td><td>joeyskater@gmail.com</td><td>01792782635</td></tr> <tr><td>Jamie Roberts</td><td>Big Breakfasts 4 You</td><td>London</td><td>jamierobs@outlook.com</td><td>07496436543</td></tr> <tr><td>James Brinks</td><td>James Media</td><td>Swansea</td><td>jamesbrinks@hotmail.com</td><td>01792946751</td></tr> <tr><td>Bob Wally</td><td>The Network Guys</td><td>Swansea</td><td>boobywallyIT@networkgys.com</td><td>01792876784</td></tr> <tr><td>Rob Sally</td><td>Breakfasts U Want</td><td>Swansea</td><td>robsally@breakfasts.com</td><td>07496436543</td></tr> <tr><td>Larry Watson</td><td>Dig Dig Diggers</td><td>Port Talbot</td><td>lazzywatz@gmail.com</td><td>07456897564</td></tr> <tr><td>Kieran Williams</td><td>Bright Bricks Media</td><td>Swansea</td><td>kwtest@gmail.com</td><td>01712782635</td></tr> </tbody> </table> </div> </div>	Kieran Williams	The Work Place	Swansea	kieranmarcus@me.com	07989019384	Bobby Walley	Th3 Network Guyz	Neath	boobywallyIT@networkgys.com	01987458672	Allen Roger	BigMerch	Cardiff	alrog@gmail.com	07496437123	Sally Hughes	Dynasty	Neath	dynastyClothing@gmail.com	07496467098	Paul Smith	Paulsmith Guitars	Swansea	psGuitars@gmail.com	07436890212	Joe Rob	Joe Skate	Port Talbot	joeyskater@gmail.com	01792782635	Jamie Roberts	Big Breakfasts 4 You	London	jamierobs@outlook.com	07496436543	James Brinks	James Media	Swansea	jamesbrinks@hotmail.com	01792946751	Bob Wally	The Network Guys	Swansea	boobywallyIT@networkgys.com	01792876784	Rob Sally	Breakfasts U Want	Swansea	robsally@breakfasts.com	07496436543	Larry Watson	Dig Dig Diggers	Port Talbot	lazzywatz@gmail.com	07456897564	Kieran Williams	Bright Bricks Media	Swansea	kwtest@gmail.com	01712782635
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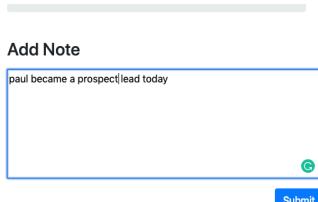
Edit contact

Because the edit contact form is the same form as the add contact form but just with a different title and the contacts data pre filled, there is no need to test the form again

Kieran Marcus Williams

Test	<p>* Try to edit a contact with all valid data but different data to what was originally entered. The contacts data in the csv file holding contact details should get modified and the contact should have the new contact details in the place of where the old details would have been displayed.</p>																				
Before	<p>Contact Details</p> <table> <tbody> <tr> <td>Business</td><td>First Name</td></tr> <tr> <td>Bright Bricks Media</td><td>Kieran</td></tr> <tr> <td>Last Name</td><td>Email</td></tr> <tr> <td>Williams</td><td>kwtest@gmail.com</td></tr> <tr> <td>Telephone</td><td>City</td></tr> <tr> <td>01712782635</td><td>Swansea</td></tr> <tr> <td>Postcode</td><td>Address</td></tr> <tr> <td>sa84nw</td><td>28 Blah Blah Road</td></tr> <tr> <td>Contact Status</td><td></td></tr> <tr> <td>Lead</td><td>▼</td></tr> </tbody> </table> <p style="text-align: center;">Submit</p>	Business	First Name	Bright Bricks Media	Kieran	Last Name	Email	Williams	kwtest@gmail.com	Telephone	City	01712782635	Swansea	Postcode	Address	sa84nw	28 Blah Blah Road	Contact Status		Lead	▼
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Data being changed	<p>Contact Details</p> <table> <tbody> <tr> <td>Business</td><td>First Name</td></tr> <tr> <td>Bloom productions</td><td>Kieran</td></tr> <tr> <td>Last Name</td><td>Email</td></tr> <tr> <td>Williams</td><td>kwtest@gmail.com</td></tr> <tr> <td>Telephone</td><td>City</td></tr> <tr> <td>01712782635</td><td>Swansea</td></tr> <tr> <td>Postcode</td><td>Address</td></tr> <tr> <td>sa84nw</td><td>28 Blah Blah Road</td></tr> <tr> <td>Contact Status</td><td></td></tr> <tr> <td>Dead Lead</td><td>▼</td></tr> </tbody> </table> <p style="text-align: center;">Submit</p>	Business	First Name	Bloom productions	Kieran	Last Name	Email	Williams	kwtest@gmail.com	Telephone	City	01712782635	Swansea	Postcode	Address	sa84nw	28 Blah Blah Road	Contact Status		Dead Lead	▼
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After	<p>Contact Successfully Edited</p> <p>Contacts List</p> <table> <thead> <tr> <th>Name</th> <th>Business</th> <th>City</th> <th>Email</th> <th>Telephone</th> </tr> </thead> <tbody> <tr> <td>Kieran Williams</td> <td>Bloom Productions</td> <td>Swansea</td> <td>kwtest@gmail.com</td> <td>01712782635</td> </tr> </tbody> </table>	Name	Business	City	Email	Telephone	Kieran Williams	Bloom Productions	Swansea	kwtest@gmail.com	01712782635										
Name	Business	City	Email	Telephone																	
Kieran Williams	Bloom Productions	Swansea	kwtest@gmail.com	01712782635																	
Pass/ Fail	Pass																				

Individual contact pageAdd notes

Test	* Try to add a note with only characters and numbers with a length between one and 250 characters. The note should get added to the notes csv file that stores data and should also get displayed in the notes list table. (typical)												
Before	 <p>Date Notes</p> <p>Edit Contact Delete Contact</p>												
After	<p>Successfully Added A Note</p> <p>Paul Smith</p> <table> <tr> <td>Business: Paulsmith Guitars</td> <td>Email: psGuitars@gmail.com</td> </tr> <tr> <td>Phone Number: 07436890212</td> <td></td> </tr> <tr> <td>City: Swansea</td> <td></td> </tr> <tr> <td>Postcode: sa89op</td> <td></td> </tr> <tr> <td>Address: 78 Green Street</td> <td></td> </tr> <tr> <td>Contacts Status: Lead</td> <td></td> </tr> </table> <p>Extra Notes</p> <p>REMEMBER THE PASSWORD! There Is No Way Of Getting The Data Back If You Forget It. Type Data Into text area and press save & encrypt to save the data to the file with xor encryption done to it. this data can be changed by first decrypting it, changing the data and then pressing the save & encrypt button again. When data is decrypted it will not save anything back to the file. If the wrong decrypt password is entered, the decrypted text will not be the original text</p> <p>Decrypt Save & Encrypt</p> <p>Date Notes</p> <p>17/03/2019 paul became a prospect lead today</p>	Business: Paulsmith Guitars	Email: psGuitars@gmail.com	Phone Number: 07436890212		City: Swansea		Postcode: sa89op		Address: 78 Green Street		Contacts Status: Lead	
Business: Paulsmith Guitars	Email: psGuitars@gmail.com												
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Contacts Status: Lead													
Pass/ Fail	Pass												

Test	* Try to add a note with 1 character. The note should get added to the notes csv file that stores data and should also get displayed in the notes list table. (extreme)
------	---

Before	<h2>Add Note</h2> <p>a</p>																				
After	<p>Successfully Added A Note</p> <p>Paul Smith</p> <table border="1" data-bbox="455 464 760 696"> <tr> <td>Business:</td><td>Paulsmith Guitars</td></tr> <tr> <td>Email:</td><td>psGuitars@gmail.com</td></tr> <tr> <td>Phone Number:</td><td>07436890212</td></tr> <tr> <td>City:</td><td>Swansea</td></tr> <tr> <td>Postcode:</td><td>sa89op</td></tr> <tr> <td>Address:</td><td>78 Green Street</td></tr> <tr> <td>Contacts Status:</td><td>Lead</td></tr> </table> <p>Extra Notes</p> <div data-bbox="995 487 1394 622" style="border: 1px solid black; padding: 10px;"> <p>REMEMBER THE PASSWORD! There Is No Way Of Getting The Data Back If You Forget It. Type Data into text area and press save & encrypt to save the data to the file with xor encryption done to it. this data can be changed by first decrypting it, changing the data and then pressing the save & encrypt button again.</p> <p>When data is decrypted it will not save anything back to the file. If the wrong decrypt password is entered, the decrypted text will not be the original text</p> </div> <div data-bbox="1260 635 1394 649" style="text-align: right;"> Decrypt Save & Encrypt </div> <p>Add Note</p> <p><input type="text"/></p> <table border="1" data-bbox="1008 696 1394 792"> <thead> <tr> <th>Date</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>17/03/2019</td> <td>a</td> </tr> <tr> <td>17/03/2019</td> <td>paul became a prospect lead today</td> </tr> </tbody> </table>	Business:	Paulsmith Guitars	Email:	psGuitars@gmail.com	Phone Number:	07436890212	City:	Swansea	Postcode:	sa89op	Address:	78 Green Street	Contacts Status:	Lead	Date	Notes	17/03/2019	a	17/03/2019	paul became a prospect lead today
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After (the a's are all displayed. the user just has to horizontally scroll in the notes table)	<p>Successfully Added A Note</p> <p>Paul Smith</p> <div style="background-color: #e0e0e0; padding: 10px;"> <p>Business: Paulsmith Guitars Email: psGuitars@gmail.com Phone Number: 07436890212 City: Swansea Postcode: sa89op Address: 78 Green Street Contacts Status: Lead</p> </div> <p>Extra Notes</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <small>REMEMBER THE PASSWORD! There Is No Way Of Getting The Data Back If You Forget It. Type Data into text area and press save & encrypt to save the data to the file with xor encryption done to it. this data can be changed by first decrypting it, changing the data and then pressing the save & encrypt button again. When data is decrypted it will not save anything back to the file. If the wrong decrypt password is entered, the decrypted text will not be the original text</small> </div> <div style="text-align: right; margin-top: 10px;"> Decrypt Save & Encrypt </div> <table border="1" style="margin-top: 20px;"> <thead> <tr> <th>Date</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>17/03/2019</td> <td>aa</td> </tr> <tr> <td>17/03/2019</td> <td>a</td> </tr> <tr> <td>17/03/2019</td> <td>paul became a prospect lead today</td> </tr> </tbody> </table>	Date	Notes	17/03/2019	aa	17/03/2019	a	17/03/2019	paul became a prospect lead today
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17/03/2019	paul became a prospect lead today								
Pass/ Fail	Pass								

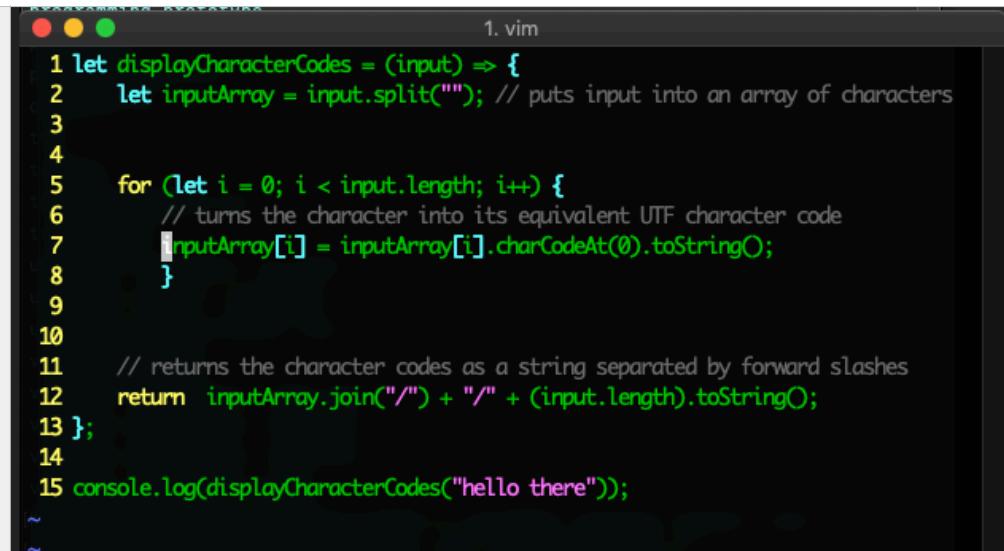
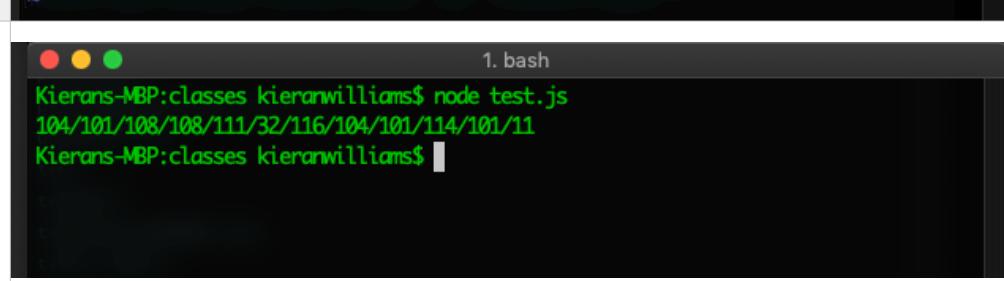
Test	* Try to add a note with no data. Appropriate validation message should get displayed and the note should not get added to the data store, nor should it get displayed in the contacts notes list. (erroneous)
Before	<p>Add Note</p> <div style="border: 1px solid #ccc; height: 100px; margin-top: 10px;"></div> <p style="text-align: right;">Submit</p>
After	<div style="background-color: #ffcccc; padding: 5px; margin-bottom: 10px;"> <small>____ Please Ensure All Text Fields Have Data Entered ____ Ensure That The Subject Field Is Within Range Of 1 - 250 Characters ____</small> </div> <p>Paul Smith</p> <div style="background-color: #e0e0e0; height: 20px; margin-top: 10px;"></div> <p>Extra Notes</p> <div style="border: 1px solid #ccc; height: 100px; margin-top: 10px;"></div>
Pass/ Fail	Pass

Test	* Try to add a note with characters other than alphabetical and numerical characters. Appropriate validation message should get displayed and the note should not get added to the data store, nor should it get displayed in the contacts notes list. (erroneous)
------	--

Before	<p>Add Note</p> <div style="border: 1px solid blue; padding: 5px; min-height: 100px;"> <pre><>hello<>there<></pre> </div> 
After	<p>____ Ensure That The Note Only Contain a-z, A-Z , And 0-9 Characters ____</p> <p>Paul Smith</p> 
Pass/ Fail	Pass

Extra Notes Text Area

Test	<ul style="list-style-type: none"> * Type text encrypt it and check that the character codes that get returned to the text area are not the same as the character codes of the original characters entered
------	---

<p>Test code to show the character codes of the original text for 'hello there'</p>	 <pre> 1 let displayCharacterCodes = (input) => { 2 let inputArray = input.split(""); 3 4 5 for (let i = 0; i < input.length; i++) { 6 // turns the character into its equivalent UTF character code 7 inputArray[i] = inputArray[i].charCodeAt(0).toString(); 8 } 9 10 11 // returns the character codes as a string separated by forward slashes 12 return inputArray.join("/") + "/" + (input.length).toString(); 13 }; 14 15 console.log(displayCharacterCodes("hello there")); ~</pre>														
<p>Character codes</p>	 <pre> Kierans-MBP:classes kieranwilliams\$ node test.js 104/101/108/108/111/32/116/104/101/114/101/11 Kierans-MBP:classes kieranwilliams\$</pre>														
<p>After entering the "hello there" text into the extra notes area and typing in a password of 'Asdfghjkl123'. This is the xor values that get outputted</p>	<p>Successfully Encrypted Data</p> <p>Paul Smith</p> <table border="1" data-bbox="428 1145 944 1527"> <tr> <td>Business:</td> <td>Paulsmith Guitars</td> </tr> <tr> <td>Email:</td> <td>psGuitars@gmail.com</td> </tr> <tr> <td>Phone Number:</td> <td>07436890212</td> </tr> <tr> <td>City:</td> <td>Swansea</td> </tr> <tr> <td>Postcode:</td> <td>sa89op</td> </tr> <tr> <td>Address:</td> <td>78 Green Street</td> </tr> <tr> <td>Contacts Status:</td> <td>Lead</td> </tr> </table> <p>Extra Notes</p> <p>41/22/8/10/8/72/30/3/9/67/87/11</p>	Business:	Paulsmith Guitars	Email:	psGuitars@gmail.com	Phone Number:	07436890212	City:	Swansea	Postcode:	sa89op	Address:	78 Green Street	Contacts Status:	Lead
Business:	Paulsmith Guitars														
Email:	psGuitars@gmail.com														
Phone Number:	07436890212														
City:	Swansea														
Postcode:	sa89op														
Address:	78 Green Street														
Contacts Status:	Lead														
<p>The character codes are different to that of the original text's character code as you can see.</p>	<table border="1" data-bbox="144 1572 1432 1644"> <tr> <td>Pass/ Fail</td> <td>Pass</td> </tr> </table>	Pass/ Fail	Pass												
Pass/ Fail	Pass														

<p>Test</p>	<ul style="list-style-type: none"> * Decrypt the text area and check that the characters returned are the same as the original text entered
-------------	--

Before	<p>Successfully Encrypted Data</p> <p>Paul Smith</p> <div style="background-color: #f0f0f0; padding: 10px;"> Business: Paulsmith Guitars Email: psGuitars@gmail.com Phone Number: 07436890212 City: Swansea Postcode: sa89op Address: 78 Green Street Contacts Status: Lead </div>	<p>Extra Notes</p> <p>41/22/8/10/8/72/30/3/9/67/87/11</p>
After	<p>Successfully Decrypted The Data</p> <p>Paul Smith</p> <div style="background-color: #f0f0f0; padding: 10px;"> Business: Paulsmith Guitars Email: psGuitars@gmail.com Phone Number: 07436890212 City: Swansea Postcode: sa89op Address: 78 Green Street Contacts Status: Lead </div>	<p>Extra Notes</p> <p>hello there</p> <p>Decrypt Save & Encrypt</p>
Pass/ Fail	Pass	

Test	<ul style="list-style-type: none"> * Decrypt the password with the wrong password, data that is not that shows no resemblance of the original text should get returned 	
Before	<p>Successfully Encrypted Data</p> <p>Paul Smith</p> <div style="background-color: #f0f0f0; padding: 10px;"> Business: Paulsmith Guitars Email: psGuitars@gmail.com Phone Number: 07436890212 City: Swansea Postcode: sa89op Address: 78 Green Street Contacts Status: Lead </div>	<p>Extra Notes</p> <p>41/22/8/10/8/72/30/3/9/67/87/11</p>

After	<p>Successfully Decrypted The Data</p> <p>Paul Smith</p> <div style="background-color: #f0f0f0; padding: 10px;"> <p>Business: Paulsmith Guitars</p> <p>Email: psGuitars@gmail.com</p> <p>Phone Number: 07436890212</p> <p>City: Swansea</p> <p>Postcode: sa89op</p> <p>Address: 78 Green Street</p> <p>Contacts Status: Lead</p> </div> <p>Extra Notes</p> <div style="border: 1px solid #ccc; padding: 5px; min-height: 100px;">eJbbo.zphpe</div> <div style="text-align: right; margin-top: -10px;"> Decrypt Save & Encrypt </div> <p style="margin-top: 20px;">Add Note</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Date</th> <th style="width: 90%;">Notes</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Date	Notes		
Date	Notes				
Pass/ Fail	Pass				

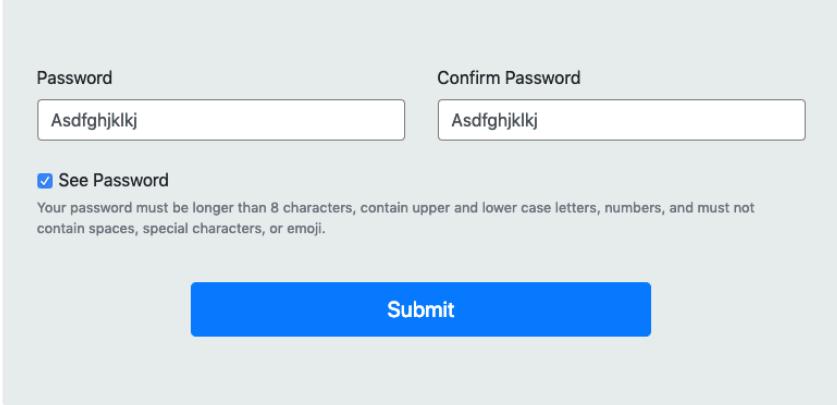
Encrypt Notes Password Form.

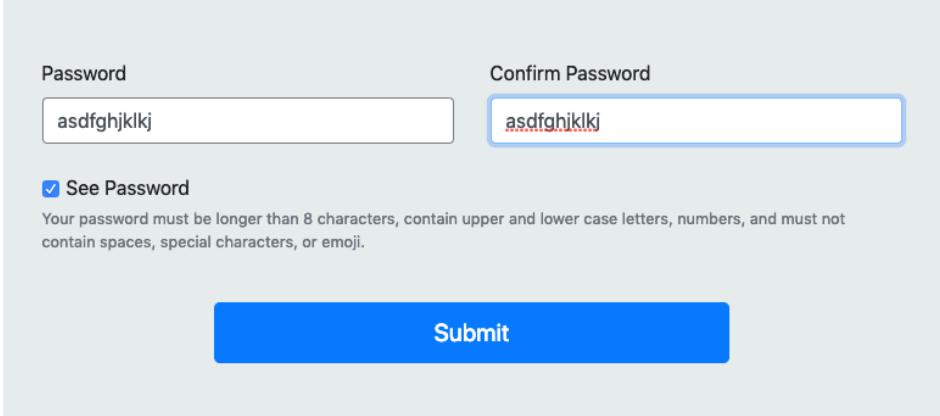
Test	<ul style="list-style-type: none"> * Test that the see password checkbox toggles the view of the text fields type between password and text (black dots and text)
Before	<p>The screenshot shows a form with two input fields: 'Password' and 'Confirm Password', both containing black dots. Below them is a checkbox labeled 'See Password'. A note below the checkbox specifies: 'Your password must be longer than 8 characters, contain upper and lower case letters, numbers, and must not contain spaces, special characters, or emoji.' At the bottom is a large blue 'Submit' button.</p>
After	<p>The screenshot shows the same form after the 'See Password' checkbox was checked. The password fields now display the text '*****' instead of black dots. The rest of the interface remains the same.</p>

Pass/ Fail	Fail
Code to make the toggle box work	<pre> ieran ✘ vim ieran: 1 ieran: 2 index.js 3 //toggles the type in the password text boxes between password and text ieran: 4 // activated by the check box onClick() ieran: 5 function showPassword() { ieran: 6 ieran: 7 let PasswordField = document.querySelector("#password"); ieran: 8 let confirmPasswordField = document.querySelector("#confirmPassword"); ieran: 9 ieran: 10 if(PasswordField == "password" && confirmPasswordField == "password"){ ieran: 11 PasswordField.type = "text"; ieran: 12 confirmPasswordField.type = "text"; ieran: 13 } ieran: 14 else { ieran: 15 PasswordField.type = "password"; ieran: 16 confirmPasswordField.type = "password"; ieran: 17 } ieran: 18 }</pre>
The problem	<p>In the if statement. There is a check to see if the password fields are == "password" but they aren't. What is being evaluated is object == 'password', returning false always.</p> <p>The change that needs to be done to get it to work is for me to get the type of the password fields</p> <pre> 1 2 3 //toggles the type in the password text boxes between password and text 4 // activated by the check box onClick() 5 function showPassword() { 6 7 let PasswordField = document.querySelector("#password"); 8 let confirmPasswordField = document.querySelector("#confirmPassword"); 9 10 if(PasswordField.type == "password" && confirmPasswordField.type == "password"){ 11 PasswordField.type = "text"; 12 confirmPasswordField.type = "text"; 13 } 14 else { 15 PasswordField.type = "password"; 16 confirmPasswordField.type = "password"; 17 } 18 }</pre> <p>change; before #1 18:36:29</p>

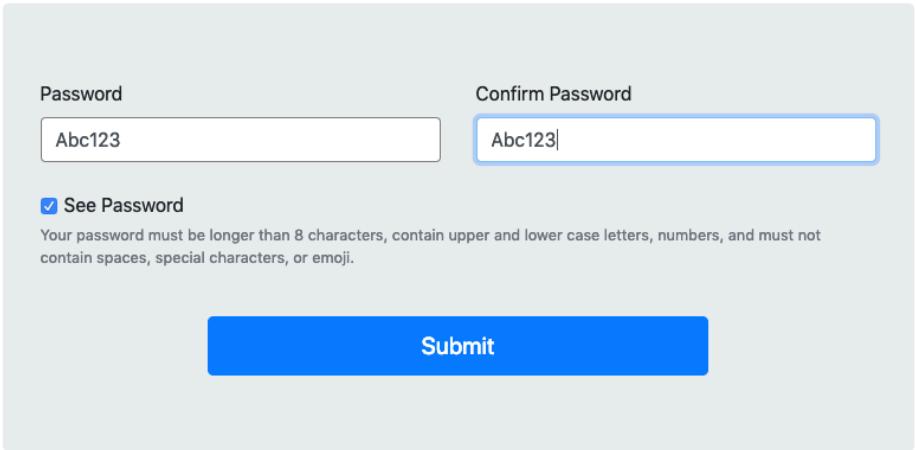
After	
Pass/ Fail	Pass

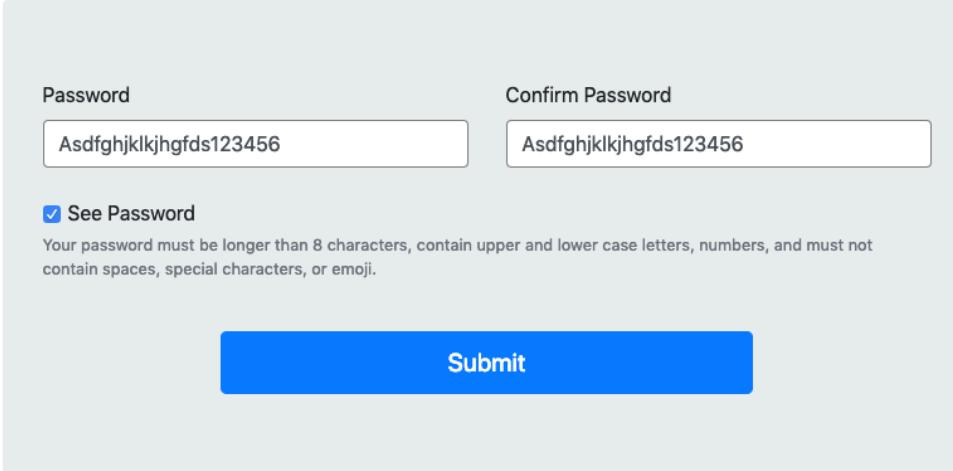
Test	<ul style="list-style-type: none"> * Test the password gets rejected and an appropriate validation message gets outputted to the user when the user enters in the password and the confirm password differently but all other validation criteria are met.
Before	
After	<p style="text-align: center;">— Ensure That The Passwords Are Equal —</p> <h2 style="text-align: center;">Encryption Password</h2>
Pass/ Fail	Pass

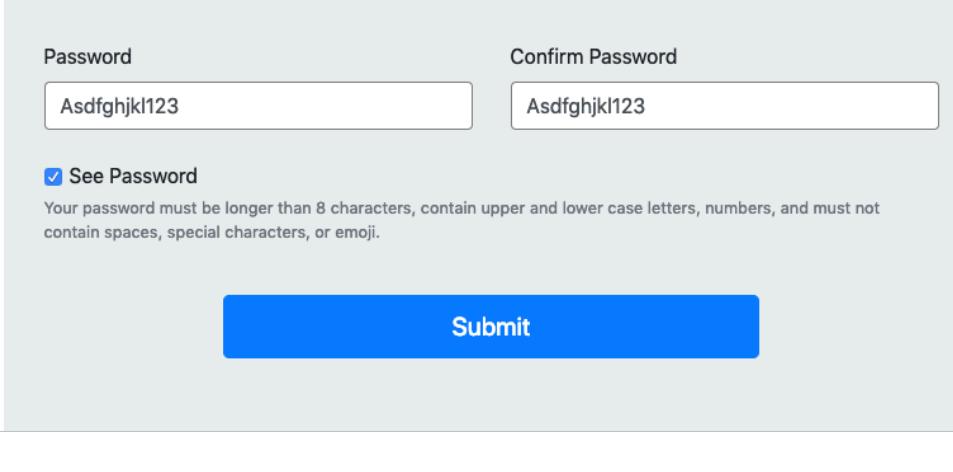
Test	Test the password gets rejected and an appropriate validation message gets outputted to the user when they enter matching passwords (in password and confirm password) but there is no numbers in the passwords (all other validation criteria should get met).
Before	
After	<p style="background-color: #f8d7da; padding: 5px; margin-bottom: 10px;">____ Ensure That Password Consists Of At Least One: Uppercase Character, Lowercase Character And Number ____</p> <h2 style="text-align: center;">Encryption Password</h2>
Pass/ Fail	Pass

Test	* Test the password gets rejected and an appropriate validation message gets outputted to the user when they enter matching passwords (in password and confirm password) but there is no upper case characters (all other validation criteria should get met).
Before	

After	<p style="text-align: center;">____ Ensure That Password Consists Of At Least One: Uppercase Character, Lowercase Character And Number ____</p> <h2 style="text-align: center;">Encryption Password</h2>
Pass/ Fail	Pass

Test	<ul style="list-style-type: none"> * Test the password gets rejected and an appropriate validation message gets outputted to the user when they enter matching passwords (in password and confirm password) but the password is less than 8 characters (all other validation criteria should get met).
Before	
After	<p style="text-align: center;">____ Ensure That The password Field Is Within Range Of 8 - 15 Characters ____</p> <h2 style="text-align: center;">Encryption Password</h2> <div style="text-align: right; margin-top: 10px;"> <input style="width: 100px; height: 20px; border: 1px solid #ccc; border-radius: 5px; padding: 2px 5px; vertical-align: middle; margin-right: 10px;" type="text"/> Password </div>
Pass/ Fail	Pass

Test	<ul style="list-style-type: none"> * Test the password gets rejected and an appropriate validation message gets outputted to the user when they enter matching passwords (in password and confirm password) but the password is greater than 15 characters (all other validation criteria should get met).
Before	
After	<p style="background-color: #f8d7da; padding: 5px; text-align: center;">____ Ensure That The password Field Is Within Range Of 8 - 15 Characters ____</p> <h2 style="text-align: center;">Encryption Password</h2> 
Pass/ Fail	Pass

Test	<ul style="list-style-type: none"> * Test the password gets accepted when the user enters matching passwords (in password and confirm password) and all validation criteria is met.
Before	

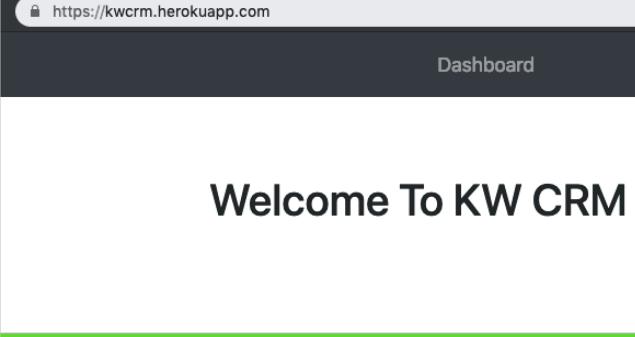
After	Successfully Changed The Encrypted Data Paul Smith	
	Business: Paulsmith Guitars Email: psGuitars@gmail.com Phone Number: 07436890212 City: Swansea Postcode: sa89op	Extra Notes 41/22/8/10/8/72/30/3/9/67/87/11
Pass/ Fail	Pass	

Decrypt Notes Password Form.

The decrypt notes password form is the same as the encrypt notes password form and so there is no need to test it vigorously and the only test that will be necessary is preformed in the extra notes section (testing that it decrypts the text and returns the decrypted text to the text area, also redirecting the user to the correct individual contacts page).

Acceptance Testing

Objective 1	The site must be accessible with a domain name typed into a web browser.
Success Criteria	Upon entering the site's domain name, the website's home page should appear.
Test	Try accessing the site with a url tha

Evidence	
Pass/Fail	Pass

Objective 2	There should be an easy way for the users to get the system set up
Success Criteria	There must be a public git hub repository set up for the system so that people can download the system. It should also include a step by step guide on how to set the system up on a server.
Test	Show that the full source code is in a GitHub repository
Evidence	N/a
Pass/Fail	Fail
Reason Of Fail	To avoid plagiarism accusations of the coursework due to it being online, this will need to be done after the coursework has been submitted
Objective 3	Conversion rate in ratio form should be in its lowest form

Success Criteria	will be successful if when typed into an online calculator that puts a fraction into its lowest form version, the top fraction value and bottom fraction value match the ratio values
Test	Already done in the System Testing Section of this document
Evidence	N/a
Pass/Fail	Pass

Objective 4	Text field form inputs containing names of people, business names or address names should get capitalised before getting saved to the database
Success Criteria	both test values of capitalised and non capitalised values as input in the relevant text fields should get saved with the words capitalised and should be seen in all outputs of them values as being capitalised.
Test	Add a contact with the names, business names and address names uncapitalised and observe to see if they get displayed with capitalised values

Evidence	<p>Contact Details</p> <table> <tr> <td>Business <input type="text" value="bright bricks media"/></td> <td>First Name <input type="text" value="kieran"/></td> </tr> <tr> <td>Last Name <input type="text" value="williams"/></td> <td>Email <input type="text" value="kwtest@gmail.com"/></td> </tr> <tr> <td>Telephone <input type="text" value="01792782635"/></td> <td>City <input type="text" value="Swansea"/></td> </tr> <tr> <td>Postcode <input type="text" value="sa84nw"/></td> <td>Address <input type="text" value="28 blah blah road"/></td> </tr> <tr> <td colspan="2">Contact Status <input type="text" value="Lead"/></td> </tr> <tr> <td colspan="2" style="text-align: center;">Submit</td> </tr> </table>	Business <input type="text" value="bright bricks media"/>	First Name <input type="text" value="kieran"/>	Last Name <input type="text" value="williams"/>	Email <input type="text" value="kwtest@gmail.com"/>	Telephone <input type="text" value="01792782635"/>	City <input type="text" value="Swansea"/>	Postcode <input type="text" value="sa84nw"/>	Address <input type="text" value="28 blah blah road"/>	Contact Status <input type="text" value="Lead"/>		Submit	
Business <input type="text" value="bright bricks media"/>	First Name <input type="text" value="kieran"/>												
Last Name <input type="text" value="williams"/>	Email <input type="text" value="kwtest@gmail.com"/>												
Telephone <input type="text" value="01792782635"/>	City <input type="text" value="Swansea"/>												
Postcode <input type="text" value="sa84nw"/>	Address <input type="text" value="28 blah blah road"/>												
Contact Status <input type="text" value="Lead"/>													
Submit													
	<table> <tr> <td>Larry Watson</td> <td>Dig Dig Diggers</td> <td>Port Talbot</td> <td>lazzywatz@gmail.com</td> <td>07456897564</td> </tr> <tr> <td>Kieran Williams</td> <td>Bright Bricks Media</td> <td>Swansea</td> <td>kwtest@gmail.com</td> <td>01792782635</td> </tr> </table>	Larry Watson	Dig Dig Diggers	Port Talbot	lazzywatz@gmail.com	07456897564	Kieran Williams	Bright Bricks Media	Swansea	kwtest@gmail.com	01792782635		
Larry Watson	Dig Dig Diggers	Port Talbot	lazzywatz@gmail.com	07456897564									
Kieran Williams	Bright Bricks Media	Swansea	kwtest@gmail.com	01792782635									
Pass/Fail	Pass												

Objective 5	No passwords should be directly saved into the database
Success Criteria	successful if no passwords are directly stored anywhere on the site, only used in a calculation to verify access or decode data.
Test	N/a : the password never gets saved as there is only a calculation using XOR that gets preformed on the data
Evidence	N/a
Pass/Fail	Pass

Objective 6	The ability to export the contacts in a CSV format.
Success Criteria	The exported file should contain all contacts that can be seen in the contacts list table and contain all of their details.
Test	The test was preformed in the System testing
Evidence	N/a
Pass/Fail	Pass

Objective 7	Accurate graphical representations of clients gained and lost over a period of time
Success Criteria	The data points should display the correct number of matches for that period of time when the cursor hovers over any data point and the graph should also look representative of the results. Will be successful if the number of matches displayed is equal to the number of matches for every possible time scale stored in the database.
Test	Test was preformed in the system testing of the system
Evidence	N/a
Pass/Fail	Pass

Objective 8	There should be an accurate display of the current conversion rate for the month
--------------------	--

Success Criteria	the conversion rate displayed will be at least 90% accurate. This will allow for any rounding or truncation on the percentage (calculation to test it: ((truncated value / full value) x 100)
Test	This was tested in the integration testing part of this document
Evidence	N/a
Pass/Fail	Pass

Objective 9	Have an easy to navigate through system
Success Criteria	at least 30% whitespace on each page, links only available upon clicking a different link should only go one layer deep.
Test	Check that the system has space between all elements and the different sections have significant spacing. Check that if a link has been clicked, no other links should be on the page
Evidence	N/a
Pass/Fail	Fail

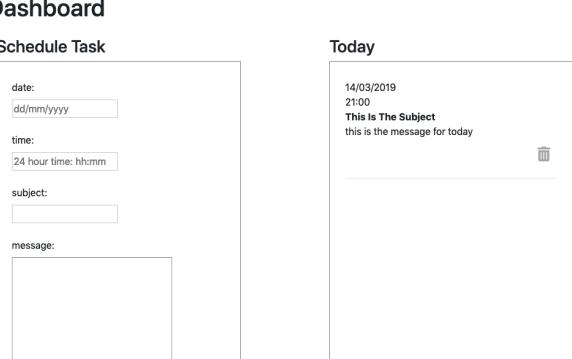
Reason Of Fail	<p>Upon creating the site, I realised that it was unrealistic to create a site this simplistic. It would mean that contacts couldn't be added for example as there is a link to take the user to the add contact form and on that page there is also a link to add the contact. To stay as close to this objective as possible, I tried to limit the links on every page as much as possible</p>
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Objective 10	<p>A relational database that is in third normal form with tables: Users, Contacts, Scheduling's, Notes, Conversations, Clients Lost.</p>
Success Criteria	<p>the ability to add, edit and delete data in all the tables.</p>
Test	<p>Add, edit and delete from all tables using the system</p>
Evidence	<p>N/a</p>
Pass/Fail	<p>Fail</p>
Reason Of Fail	<p>The interface does not have the ability to edit or delete notes. This was done as all contact between a contact should be documented without the ability to get accidentally deleted or changed as it is an integral part of the system.</p>

Objective 11	<p>There must be a page that allows the user to input that a conversion has been made, a lead was lost or a client has been lost, which gets recorded into the database.</p>
Success Criteria	<p>all inputs must get put into a database provided there is an Internet connection and the client is connected to the web server at the time of the operation.</p>
Test	<p>Check that upon clicking the client gained, client lost and lead lost buttons, an effect has happened to the visual representations outputted to the user</p>
Evidence	<p>Clients Lost</p> <p>Client Lost Client Gained Lead Lost Remove All Data</p>
After clicking the client lost button	<p>Clients Lost</p> <p>Client Lost Client Gained Lead Lost Remove All Data</p>
Pass/Fail	Pass

Objective 12	There must be good website security
Success Criteria	no encrypted notes can be made with a password that isn't at least 8 characters, with at least one uppercase letter, one lowercase letter, and one number. No cross site scripting attacks or sql injection attacks should be possible, will test by trying to execute xxs script into every text field that sends data to the server. Will test sql injection by trying to get data from the database by entering sql queries into the url bar on every page.
Test	Tests done in the system testing, and security testing
Evidence	N/a
Pass/Fail	Pass

Objective 13	There must be a way of scheduling tasks/appointments from the dashboard.
Success Criteria	providing there's an internet connection, all tasks and appointments will be added into a database
Test	Test done in the system testing
Evidence	N/a
Pass/Fail	Pass

Objective 14	Things scheduled for the day should be made clear on the dashboard
Success Criteria	Anything scheduled for the day must be displayed.
Test	Type in a scheduled task that has a date of the current day and a time in the future
Evidence	<p>Dashboard</p> <p>Schedule Task</p> 
	<p>Successfully Added A Scheduled Task</p> <p>Dashboard</p> <p>Schedule Task</p>  <p>Today</p>
Pass/Fail	Pass

Objective 15	A notes section will be on the contact's page where the notes will get saved into the database.
--------------	---

Success Criteria	All notes that are saved while there is an internet connection must get saved into the database						
Test	Create a note for a contact and check that it gets displayed						
Evidence	<p>Add Note</p> <div style="border: 1px solid #ccc; padding: 10px; min-height: 150px;"> <p>this is a note for the objective test</p> <div style="text-align: right; margin-top: -10px;">G</div> </div> <p style="text-align: right;">Submit</p>						
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #cccccc;"> <th>Date</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>14/03/2019</td> <td>this is a note for the objective test</td> </tr> <tr> <td>12/02/2019</td> <td>he needed time to think over what we discussed call next week</td> </tr> </tbody> </table>	Date	Notes	14/03/2019	this is a note for the objective test	12/02/2019	he needed time to think over what we discussed call next week
Date	Notes						
14/03/2019	this is a note for the objective test						
12/02/2019	he needed time to think over what we discussed call next week						
Pass/Fail	Pass						

Objective 16	Notes relating to a contact should get displayed in chronological order
Success Criteria	All notes must be displayed to the user in the order of them being saved provided they are saved at least a minute apart.
Test	Add a note and then add another note straight after within the minute, if it shows the newest note first then it is successful

Evidence	<table border="1"> <thead> <tr> <th>Date</th><th>Notes</th></tr> </thead> <tbody> <tr> <td>14/03/2019</td><td>second note at 8pm exactly</td></tr> <tr> <td>14/03/2019</td><td>first note at time 8pm exactly</td></tr> </tbody> </table>	Date	Notes	14/03/2019	second note at 8pm exactly	14/03/2019	first note at time 8pm exactly
Date	Notes						
14/03/2019	second note at 8pm exactly						
14/03/2019	first note at time 8pm exactly						
Pass/Fail	Pass						

Objective 17	There needs to be a text area on the contact page that can store data encrypted through the use of a password.						
Success Criteria	The text in the text area must only be readable through decryption using the correct password. And the text stored in the database must be the encrypted text if the text gets encrypted with a password.						
Test	Add a note and then add another note straight after within the minute, if it shows the newest note first then it is successful						
Evidence	<table border="1"> <thead> <tr> <th>Date</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>14/03/2019</td> <td>second note at 8pm exactly</td> </tr> <tr> <td>14/03/2019</td> <td>first note at time 8pm exactly</td> </tr> </tbody> </table>	Date	Notes	14/03/2019	second note at 8pm exactly	14/03/2019	first note at time 8pm exactly
Date	Notes						
14/03/2019	second note at 8pm exactly						
14/03/2019	first note at time 8pm exactly						
Pass/Fail	Pass						

Objective 18	The encrypted notes should get saved into the database and when decrypted, the data should only be displayed to the user never saved into the database as unencrypted
Success Criteria	successful if the data is never stored in the database through every step of the encryption and decryption stage of the system
Test	Go through the extra notes process and check the data store file that the unencrypted data is never stored through all processes
Evidence	<p>View</p> <pre> 1 17gdv3216js262g0b,2019-02-12T09:35:47+00:00,mlwmc41eznjrxy3t15,41/22/8/10/8/72/30/3/9/67/87/19/ 2 mlwmc41xpnjs0k9q1f,2019-02-11T00:00:00+00:00,9rh7j15w2jrqyx0m3,8/32/10/16/69/40/31/19/7/73/40/6 3 mlwmc41y9qjs0m3q,2019-02-11T00:00:00+00:00,mlwmc4139ojrwkimu,9/22/8/10/8/72/29/4/62/93/86/11 4 mlwmc42118js0s8jq,2019-02-11T20:20:51+00:00,9rh7j15xxjrqz103c,41/22/22/70/9/9/30/2/3/95/83/95/29/111/93/74/72/73/70/74/3/9/93/94/92/80/4/41/22/22/3/55, </pre>
Extra Notes	<p>note to be added</p> <p>Decrypt Save & Encrypt</p> <pre> 1 gdv3216js262g0b,2019-02-12T09:35:47+00:00,mlwmc41eznjrxy3t15,41/22/8/10/8/72/30/3/9/67/87/19/54/28/22/10/3/27/18, mlwmc41xpnjs0k9q1f,2019-02-11T00:00:00+00:00,9rh7j15w2jrqyx0m3,8/32/10/16/69/40/31/19/7/73/40/6/21/14/14, mlwmc41y9qjs0m3q,2019-02-11T00:00:00+00:00,mlwmc4139ojrwkimu,9/22/8/10/8/72/29/4/62/93/86/11, mlwmc42118js0s8jq,2019-02-11T20:20:51+00:00,9rh7j15xxjrqz103c,41/22/22/70/9/9/30/2/3/95/83/95/27/26/10/21/18/26/11/5/15/84/18/93/5/29/111/93/74/72/73/70/74/3/9/93/94/92/80/4/41/22/22/3/55, </pre>

<div style="background-color: #f0f0f0; padding: 10px; border-radius: 5px;"> <div style="margin-bottom: 10px;"> <div style="display: flex; justify-content: space-around;"> <div style="width: 45%;">Password</div> <div style="width: 45%;">Confirm Password</div> </div> <div style="border: 1px solid #ccc; width: 100%; height: 15px; margin-top: 5px;"></div> </div> <div style="display: flex; justify-content: space-between; font-size: 0.8em;"> <input type="checkbox"/> See Password Your password must be longer than 8 characters, contain upper and lower case letters, numbers, and must not contain spaces, special characters, or emoji. </div> <div style="text-align: center; margin-top: 10px;"> <input style="background-color: #0072bc; color: white; border: none; padding: 5px; border-radius: 3px; width: fit-content;" type="button" value="Submit"/> </div> </div>	<pre>1 7gdv3216js262g0b,2019-02-12T19:35:47+00:00,mlwmc41eznjrxy3t15,41/22/8/10/8/72 2 mlwmc41xpnjs0kqqlf,2019-02-11T00:00:00+00:00,9rh7j15w2jrqyx0m3,8/32/10/16/69/4 3 mlwmc41y9ajis0m3o0b,2019-02-11T00:00:00+00:00,mlwmc4139ojrwkirmu,9/22/8/10/8/72 4 mlwmc42118js0s8jqa,2019-02-11T20:20:51+00:00,9rh7j15xxjrqz103c,41/22/22/70/9/9 29/111/93/74/72/73/70/74/3/9/93/94/92/88/4/41/22/22/2/55,</pre>
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Encryption Password

Password

Confirm Password

See Password
Your password must be longer than 8 characters, contain upper and lower case letters, numbers, and must not contain spaces, special characters, or emoji.

**The encrypted note got saved to the file store
after the password had been entered**

Extra Notes

47/28/16/3/71/28/5/75/14/84/18/82/37/23/1/2/16

Fully Decrypted The Data	
Watson <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> Business: Dig Dig Diggers Address: lazzywatz@gmail.com Phone Number: 07456697564 Code: Port Talbot Code: sa131dp Address: Station Road Status: Current Client </div>	
Extra Notes note to be added	<input style="background-color: #0072bc; color: white; border: none; padding: 2px 10px; border-radius: 3px; margin-right: 10px;" type="button" value="Decrypt"/> <input style="background-color: #0072bc; color: white; border: none; padding: 2px 10px; border-radius: 3px;" type="button" value="Save & Encrypt"/>

```
1 7gdv3216js262g0b,2019-02-12T19:35:47+00:00,mlwmc41eznjrxy3t15,41/22/8/10/8/72/30/3/9/67/87/19/54/28/22/10/3/27/18,
2 mlwmc41xpnjs0kqqlf,2019-02-11T00:00:00+00:00,9rh7j15w2jrqyx0m3,8/32/10/16/69/40/31/19/7/73/40/6/21/14/14,
3 mlwmc41y9ajis0m3o0b,2019-02-11T00:00:00+00:00,mlwmc4139ojrwkirmu,9/22/8/10/8/72/29/4/62/93/86/11,
4 mlwmc42118js0s8jqa,2019-02-11T20:20:51+00:00,9rh7j15xxjrqz103c,41/22/22/70/9/9/38/2/3/95/83/95/97/26/10/21/18/26/1
29/111/93/74/72/73/70/74/3/9/93/94/92/88/4/41/22/22/2/55,
```

The note stayed encrypted in the file store for all of the encryption and decryption processes	
Pass/Fail	Pass

Objective 20	There should be adequate validation for any data input.
Success Criteria	At least 80% of invalid data input should be caught by the validation methods
Test	To test all possible validation inputs would take too long but the system testing covers enough validation to cover 80%
Evidence	N/a
Pass/Fail	Pass

Objective 21	There should be adequate verification.
Success Criteria	At least 60% of inputs that add, modify or delete data should include verification before the function is carried through.
Test	To test all inputs to see if they have verification before submitting
Evidence	N/a
Pass/Fail	Fail

Reason For Fail	<p>To achieve this objective would add unnecessary complications to the users experience and to add and edit records, multiple links must be pressed before the change would be made. This means that it'd be unlikely the user could accidentally do this. However for the delete contacts button there is verification to confirm the user wants to delete the contact. This feature will be displayed to the user when asking them for feedback and their response will be what determines on If the system needs more verification or not.</p>
------------------------	--

Objective 22	<p>The contacts in the contact view page must be sortable</p>
Success Criteria	<p>There must be at least 2 different ways the contacts can get sorted with accuracy down to a minute time stamp (if sorted by date and time) and 100% alphabetically correct.</p>

<p>Test</p>	<p>Test to see if there are at least 2 ways the contacts can be sorted with one being alphabetically based and the other based on the time the contact was added.</p> <p>To test the time the contact was added down to the minute, I will create 2 contacts within the same minute, and when the contacts get sorted, the one that was added the latest should be at the boundaries in both ascending and descending sorts done on date.</p>																																																		
<p>Evidence</p>	<table border="1"> <thead> <tr> <th>Name</th><th>Business</th><th>City</th><th>Email</th><th>Telephone</th></tr> </thead> <tbody> <tr> <td>Allen Roger</td><td>BigMerch</td><td>Cardiff</td><td>alrog@gmail.com</td><td>07496437123</td></tr> <tr> <td>Sally Hughes</td><td>Dynasty</td><td>Neath</td><td>dynastyClothing@gmail.com</td><td>07496467098</td></tr> <tr> <td>Paul Smith</td><td>Paulsmith Guitars</td><td>Swansea</td><td>psGuitars@gmail.com</td><td>07436890212</td></tr> <tr> <td>Joe Rob</td><td>Joe Skate</td><td>Port Talbot</td><td>joeskater@gmail.com</td><td>01792782635</td></tr> <tr> <td>Jamie Roberts</td><td>Big Breakfasts 4 You</td><td>London</td><td>jamierobs@outlook.com</td><td>07496436543</td></tr> <tr> <td>James Brinks</td><td>James Media</td><td>Swansea</td><td>jamesbrinks@hotmail.com</td><td>01792946751</td></tr> <tr> <td>Bob Wally</td><td>The Network Guys</td><td>Swansea</td><td>boobywallyIT@networkgys.com</td><td>01792876784</td></tr> <tr> <td>Rob Sally</td><td>Breakfasts U Want</td><td>Swansea</td><td>robsally@breakfasts.com</td><td>07496436543</td></tr> <tr> <td>Larry Watson</td><td>Dig Dig Diggers</td><td>Port Talbot</td><td>lazzywatz@gmail.com</td><td>07456897564</td></tr> </tbody> </table>	Name	Business	City	Email	Telephone	Allen Roger	BigMerch	Cardiff	alrog@gmail.com	07496437123	Sally Hughes	Dynasty	Neath	dynastyClothing@gmail.com	07496467098	Paul Smith	Paulsmith Guitars	Swansea	psGuitars@gmail.com	07436890212	Joe Rob	Joe Skate	Port Talbot	joeskater@gmail.com	01792782635	Jamie Roberts	Big Breakfasts 4 You	London	jamierobs@outlook.com	07496436543	James Brinks	James Media	Swansea	jamesbrinks@hotmail.com	01792946751	Bob Wally	The Network Guys	Swansea	boobywallyIT@networkgys.com	01792876784	Rob Sally	Breakfasts U Want	Swansea	robsally@breakfasts.com	07496436543	Larry Watson	Dig Dig Diggers	Port Talbot	lazzywatz@gmail.com	07456897564
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<p>Contacts added within a minute of one another, sorted by date ascending and depending shows</p> <p>bob Wally was added last and is at the extreme ends in Both ascending and descending order</p>	<table border="1"> <thead> <tr> <th>Name</th><th>Business</th><th>City</th><th>Email</th><th>Telephone</th></tr> </thead> <tbody> <tr> <td>Bob Wally</td><td>The Network Guys</td><td>Swansea</td><td>boobywallyIT@networkgys.com</td><td>01987458672</td></tr> <tr> <td>Kieran Williams</td><td>The Work Place</td><td>Swansea</td><td>kieranmarcus@me.com</td><td>07989019384</td></tr> </tbody> </table> <p>Testing the sorting by business name shows:</p>	Name	Business	City	Email	Telephone	Bob Wally	The Network Guys	Swansea	boobywallyIT@networkgys.com	01987458672	Kieran Williams	The Work Place	Swansea	kieranmarcus@me.com	07989019384																																			
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<i>Business Name"</i>		The business names are sorted 100% in alphabetical order
Name	Business	
Jamie Roberts	Big Breakfasts 4 You	
Allen Roger	BigMerch	
Rob Sally	Breakfasts U Want	
Larry Watson	Dig Dig Diggers	
Sally Hughes	Dynasty	
James Brinks	James Media	
Joe Rob	Joe Skate	
Paul Smith	Paulsmith Guitars	
Bob Wally	The Network Guys	
Bob Wally	The Network Guys	
Kieran Williams	The Work Place	

Pass/Fail

Pass

Objective 23	There must be a way to sort the contacts in both ascending and descending order																																																																																																																								
Success Criteria	The contacts sorted in ascending order of any field must be in the complete reverse order when put in descending order.																																																																																																																								
Test	Sort the contacts in ascending order by first name and then in descending order, both screenshots should be the reverse of the other.																																																																																																																								
Evidence	The contacts are in reversed order when compared between the the ascending and descending order as expected.																																																																																																																								
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Objective 24	The contacts in the contact view page must be searchable
Success Criteria	There must be at least 2 fields which get searched through. All contacts that contain the data in the search bar in either of the fields that get search through, will remain in the list. All contacts not meeting the specified criteria must be removed from the display list.
Test	Done in the System Testing
Evidence	N/a
Pass/Fail	Pass

Objective 25	The project must be GDPR compliant.
Success Criteria	<p>Users will need to be informed on any information that is collected on them with specification on how long their data will be stored. The use of SSL. All consent forms are to be set to unchecked. There must be an easy way for users to ask what data is being stored on them.</p> <p>Give the user the right “to be forgotten”, meaning they are able to have all data stored on them removed.</p>

Test	Show that the system shows any data that will be stored on the user. Prove the system uses SSL. Show that all consent forms are to have unchecked text boxes by default. Show that there is an easy place of contact so that the users can request data stored on them. There should be a way for the user to have their data removed.
Evidence	<p>As the system will be hosted by the user, there will be no data stored on the user by any third party.</p> <p>The System does not have SSL</p> <p>There is an email for the users to be able to reach out to.</p> <p>The user has full control of deleting their data as they are the only person in control of it.</p>

Terms And Conditions

By Using This Website You Are Agreeing To These Terms And Conditions.

Any data held on your contacts is your responsibility.
You agree to be liable for any GDPR law breeches that are related to the contacts you have created.

If you wish to receive data that we hold regarding your usage of the system
you must make a formal request in the form of an email to kieranmarcus@KWCrm.com

Pass/Fail

Failed on the SSL

Reason For Fail	SSL was quite hard to implement and it will need to be done in the next version of the system as it is vital for the security of the system.
------------------------	---

Objective 26	There must be a way of adding, modifying and deleting contacts
Success Criteria	The data on any contacts stored in the database must also get affected 100% correctly to the operations preformed in the system. This is provided that the database isn't full and there is a connection to the internet at the time of doing so.
Test	Done in the System Testing
Evidence	N/a
Pass/Fail	Pass

Objective 27	There must be a way of viewing all contacts that are stored in a list on a page
Success Criteria	The page must not crash and must show all contacts that user has created and are stored in the database.

Test	Show all the contacts stored in the contacts list as well as the contacts stored in the data store file. Check that all the contacts in the csv file are displayed the user in the contacts list.																																																												
Evidence	All contacts that are in the csv file are displayed to the user in the contacts list.																																																												
	<table border="1"> <thead> <tr> <th>Name</th><th>Business</th><th>City</th><th>Email</th><th>Telephone</th></tr> </thead> <tbody> <tr><td>Allen Roger</td><td>BigMerch</td><td>Cardiff</td><td>alrog@gmail.com</td><td>07496437123</td></tr> <tr><td>Sally Hughes</td><td>Dynasty</td><td>Neath</td><td>dynastyClothing@gmail.com</td><td>07496467098</td></tr> <tr><td>Paul Smith</td><td>Paulsmith Guitars</td><td>Swansea</td><td>psGuitars@gmail.com</td><td>07436890212</td></tr> <tr><td>Joe Rob</td><td>Joe Skate</td><td>Port Talbot</td><td>joeyskater@gmail.com</td><td>01792782635</td></tr> <tr><td>Jamie Roberts</td><td>Big Breakfasts 4 You</td><td>London</td><td>jamierobs@outlook.com</td><td>07496436543</td></tr> <tr><td>James Brinks</td><td>James Media</td><td>Swansea</td><td>jamesbrinks@hotmail.com</td><td>01792946751</td></tr> <tr><td>Bob Wally</td><td>The Network Guys</td><td>Swansea</td><td>boobywallyIT@networkgys.com</td><td>01792876784</td></tr> <tr><td>Rob Sally</td><td>Breakfasts U Want</td><td>Swansea</td><td>robsally@breakfasts.com</td><td>07496436543</td></tr> <tr><td>Larry Watson</td><td>Dig Dig Diggers</td><td>Port Talbot</td><td>lazzywatz@gmail.com</td><td>07456897564</td></tr> <tr><td>Kieran Williams</td><td>The Work Place</td><td>Swansea</td><td>kieranmarcus@me.com</td><td>07989019384</td></tr> <tr><td>Bob Wally</td><td>The Network Guys</td><td>Swansea</td><td>boobywallyIT@networkgys.com</td><td>01987458672</td></tr> </tbody> </table> <pre> x vim 1 9rh7j15w2jrqy0m3,2019-02-04T00:00:00+00:00,BigMerch,Allen,Roger,alrog@gmail.com,07496437123,Cardiff,ca078dw,18 Main Street,past-client, 2 9rh7j15xxjrqz103c,2019-02-04T00:00:00+00:00,Dynasty,Sally,Hughes,dynastyClothing@gmail.com,07496467098,Neath,sa95nb,Abbey Road,dead-lead, 3 9rh7j16izjrqz125e,2019-02-04T00:00:00+00:00,Paulsmith Guitars,Paul,Smith,psGuitars@gmail.com,07436890212,Swansea,sb89op,78 Green Street,lead, 4 mlwmc41eznjrxy2mfj,2019-02-09T00:00:00+00:00,Joe Skate,Joe,Rob,joeyskater@gmail.com,01792782635,Port Talbot,sa94bw,32 Blah Blah Road,recontact-lead, 5 mlwmc41eznjrxy3t15,2019-02-09T00:00:00+00:00,Big Breakfasts 4 You,Jamie,Roberts,jamierobs@outlook.com,07496436543,London,ln09eb,Queens Street,recontact-lead, 6 mlwmc41eznjrxy48r0,2019-02-09T00:00:00+00:00,James Media,James,Brinks,jamesbrinks@hotmail.com,01792946751,Swansea,sa14na,22 Abc Castle Road,recontact-lead, 7 mlwmc41eznjrxy6sm3,2019-02-09T00:00:00+00:00,The Network Guys,Bob,Wally,boobywallyIT@networkgys.com,01792876784,Swansea,sa14na,22 Abc Castle Road,lead, 8 mlwmc41z37js0te8c,2019-02-11T00:00:00+00:00,Breakfasts U Want,Rob,Sally,robsally@breakfasts.com,07496436543,Swansea,sa19op,Kingsway,past-client, 9 mlwmc4a6ojrt8dpg,2019-02-06T00:00:00+00:00,Dig Dig Diggers,Larry,Watson,lazzywatz@gmail.com,07456897564,Port Talbot,sa131dp,Station Road,current-client, 10 3um0kaxcjta8j4yh,2019-03-15T15:46:37+00:00,The Work Place,Kieran,Williams,kieranmarcus@me.com,07989019384,Swansea,sa84rw,James Street,lead, 11 3um0kaxcjta8jy5k,2019-03-15T15:47:14+00:00,The Network Guys,Bob,Wally,boobywallyIT@networkgys.com,01987458672,Swansea,sa14na,22 Abc Castle Road,lead, ~ 1,1 All </pre>	Name	Business	City	Email	Telephone	Allen Roger	BigMerch	Cardiff	alrog@gmail.com	07496437123	Sally Hughes	Dynasty	Neath	dynastyClothing@gmail.com	07496467098	Paul Smith	Paulsmith Guitars	Swansea	psGuitars@gmail.com	07436890212	Joe Rob	Joe Skate	Port Talbot	joeyskater@gmail.com	01792782635	Jamie Roberts	Big Breakfasts 4 You	London	jamierobs@outlook.com	07496436543	James Brinks	James Media	Swansea	jamesbrinks@hotmail.com	01792946751	Bob Wally	The Network Guys	Swansea	boobywallyIT@networkgys.com	01792876784	Rob Sally	Breakfasts U Want	Swansea	robsally@breakfasts.com	07496436543	Larry Watson	Dig Dig Diggers	Port Talbot	lazzywatz@gmail.com	07456897564	Kieran Williams	The Work Place	Swansea	kieranmarcus@me.com	07989019384	Bob Wally	The Network Guys	Swansea	boobywallyIT@networkgys.com	01987458672
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Pass/Fail	Pass
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Objective 28	There must be a way of viewing all details of each individual contact on a page
---------------------	---

Success Criteria	The page must show all up to date data that has been stored or modified on a contact (whatever the database has stored for the contact's details, the page should output).
Test	Open a contacts individual page and show that it displays all the contacts data edit the contact's data and then check that the individual contact page has been updated with the new data
Evidence	All contacts that are in the csv file are displayed to the user in the contacts list.

Bob Wally

Business: The Network Guys	Email: boobywallyIT@networkgys.com
Phone Number: 01987458672	City: Swansea
Postcode: SA14NA	Address: 22 Abc Castle Road
Contacts Status: Lead	

Extra Notes

REMEMBER THE PASSWORD! There Is No Way Of Getting The Data Back If You Forget It. Type Data Into Text Area And Press Save & Encrypt To Save The Data To The File With Xor Encryption Done To It. This Data Can Be Changed By First Decrypting It, Changing The Data And Then Pressing The Save & Encrypt Button Again. When Data Is Decrypted It Will Not Save Anything Back To The File. If The Wrong Decrypt Password Is Entered, The Decrypted Text Will Not Be The Original Text

Date **Notes**

Add Note

Submit

Edit Contact Delete Contact

1 9rh7j15w2jrqyx0m3,2019-02-04T00:00:00+00:00,BigMerch,Allen,Roger,alrog@gmail.com,07496437123,Cardiff,ca078dw,18 Main Street,past-client,
2 9rh7j15xxjrqz103c,2019-02-04T00:00:00+00:00,Dynasty,Sally,Hughes,dynastyClothing@gmail.com,07496467098,Nerth,sa95nb,Abbey Road,dead-lead,
3 9rh7j16izjrqz125e,2019-02-04T00:00:00+00:00,Paulsmith Guitars,Paul,Smith,psGuitars@gmail.com,07436890212,Swansea,sa89op,78 Green Street,lead,
4 mlwmc41eznjrxy2mfj,2019-02-09T00:00:00+00:00,Joe Skate,Joe,Rob,joeyeskater@gmail.com,01792782635,Port Talbot,sa94bw,32 Blah Blah Road,recontact-lead,
5 mlwmc41eznjrxy3t15,2019-02-09T00:00:00+00:00,Big Breakfasts 4 You,Jamie,Roberts,jamierobs@outlook.com,07496436543,London,Ln09eb,Queens Street,recontact-lead,
6 mlwmc41eznjrxy48n0,2019-02-09T00:00:00+00:00,James Media,James,Brinks,jamesbrinks@hotmail.com,01792946751,Swansea,sa14na,22 Abc Castle Road,recontact-lead,
7 mlwmc41eznjrxy5100,2019-02-09T00:00:00+00:00,The Network Guys,Bob,Wally,boobywallyIT@networkgys.com,01987458672,Swansea,sa14na,22 Abc Castle Road,lead,
8 mlwmc41z7js0te8c,2019-02-11T00:00:00+00:00,Breakfasts U Want,Rob,Sally,robsally@breakfasts.com,07496436543,Swansea,sa19op,Kingsway,past-client,
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-- VISUAL --

8,1 All

Contact Details

Business	First Name
<input type="text" value="Th3 Network Guyz"/>	<input type="text" value="Bobby"/>
Last Name	Email
<input type="text" value="Walley"/>	<input type="text" value="boobywallyIT@networkgys.com"/>
Telephone	City
<input type="text" value="01987458672"/>	<input type="text" value="Neath"/>
Postcode	Address
<input type="text" value="sa14na"/>	<input type="text" value="22 Abc Castle Road"/>
Contact Status	
<input type="text" value="Lead"/>	▼

Submit

Bobby Walley

Business: Th3 Network Guyz
Email: boobywallyIT@networkgys.com
Phone Number: 01987458672
City: Neath
Postcode: sa14na
Address: 22 Abc Castle Road
Contacts Status: Lead

Add Note
Date

Extra Notes

REMEMBER THE PA
You Forget It. Type i
with xor encryption
to it. this data can b
the save & encrypt i
When data is decry
password is entered
not be the original t

Pass/Fail
Pass

Objective 29	There must be a way of only accessing the site if you are the authorised user of the site
Success Criteria	someone accessing the sites url must only be able to gain access to the site if they are authorised to have access to that site.
Test	Show that there is a process that the user must go through to be able to access the system

Evidence	Upon opening the website, there was no authentication and so, anyone that went to the domain name was able to use the system
Pass/Fail	Fail
Change to the system	Added a way to authenticate the user with their email
Evidence	When the user accesses the domain now, they are presented with a screen asking for their email. If the email entered is that of an email that is registered for the site to authorise, the site will send the user an email with a link to store a cookie in their browser to grant them access.
Protected site	<p>Access to this site is restricted, please verify your email:</p> <p><input type="text" value="kwcrmemail@gmail.com"/> <input type="button" value="Request a login token"/></p> <p>Email verification <verify@wwwwhisper.io> to me ▾</p> <p>Hello,</p> <p>You have requested access to https://stormy-shelf-85938.herokuapp.com. Open this link to verify your email address:</p> <p>https://stormy-shelf-85938.herokuapp.com/wwwwhisper/auth/api/login/?next=%2F&token=eJwdj0EKgzAQAP-yZ40mUYk59oK_mkQq-2FqKY0-PSc6nr2bV-Uwlb2V61Pq4vqHckVg%3A1n5CaB%3Ad_8t8du2C7vUe8ZoDl5h47RiarE</p> <p>If you have not requested such access, please ignore this email. The link is valid for the next 30 minutes and can be used once.</p>
Welcome To KW CRM	<p>About This Customer Relationship Management System</p> <p>Many business management software can be quite expensive. So, I created this generic customer relationship management system (CRM). However, this site is a generic CRM that is web based and will allow for many businesses that are unable to afford the bespoke software to have access to the services provided by them. The problem with many of the online CRMs is that they offer too many services and overcomplicate things for many end users. The aim of this system is to incorporate only what small business owners and freelancers need and not overwhelm users with an abundance of features. Other online CRMs also often cost a monthly subscription to use.</p> <p>KW CRM is your best option for a free simple Customer Relationship Management System</p> <p><input type="button" value="kwcrmemail@gmail.com"/> <input type="button" value="Sign out ⚡"/></p>

The authorised user is the only user able to access the website now unless the cookie is stolen by a hacker or the email address which is granted access is compromised	
Pass/Fail	Pass

User Testing

Two users were asked for their response on a list of things to check that got given to them before they used to the system. The questions are related to the objectives.

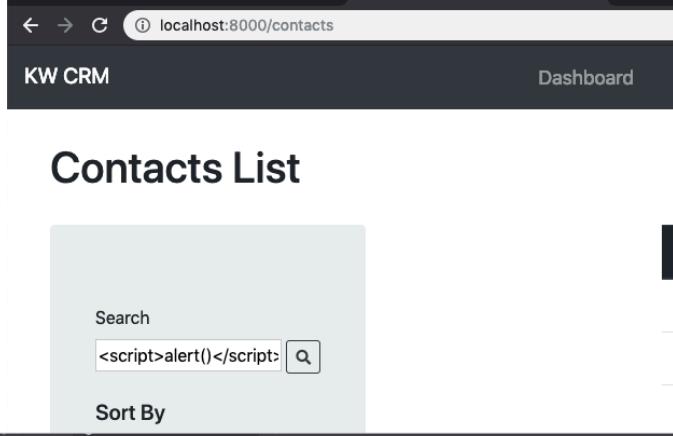
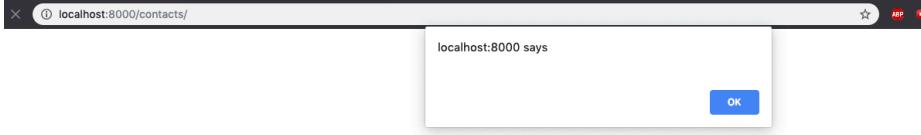
Questions	Response 1	Response 2
Were you are able to access the website via the url	Yes	Yes
Was the conversion rate always in the lowest form	Yes	Yes
Do all the text fields taking names as input, capitalise the input?	Yes	Yes
were you able to download all the contacts data as a csv file?	Yes	Yes
do the graphs accurately represent the clients lost and gained over the set period of time	Yes	Yes
does the conversion rate accurately show the conversion rate as both a ratio and a percentage	Not always, at one time the conversion rate showed 0:0 when it shouldn't have but it only happened once	Yes
do you feel as though the system is easy to navigate through and are all features intuitive to use	Yes	Yes
on the analytics page, were you able to set a contact gain, contact loss, and lead lost	Yes	Yes

Questions	Response 1	Response 2
were you able to remove all data that the analytics page stored.	No it asked for confirmation but never deleted all the data	No it did not work
were the things scheduled for the current day clear on the dashboard	Yes	Yes
were the things scheduled for the future clear on the dashboard	Yes	Yes
were you able to remove things scheduled on the dashboard	Yes	Yes
do any of the previous scheduled tasks remain on the page after the date has passed	Yes	Yes
do the scheduled tasks get presented in chronological order	Yes	Yes
do notes saved in a contacts page get shown in chronological order?	Yes	Yes
Were you able to successfully able to use the encrypted extra notes section	Yes	Yes
Was the validation adequate	Yes	Yes
Was the verification adequate	Yes	Yes
Were you able to successfully search for a contact	Yes	Yes
Did all of your contacts get displayed in the contacts list	Yes	Yes
Did all the sorting criteria in both ascending and descending work for the contacts list	Yes	Yes
were you able to view all contact's individual pages	Yes	Yes
was there anything else you want to mention	If you go to encrypt a note, and it does not pass the verification then a validation message shows. If you go straight to the contacts list page after, the validation message is on the contacts list page. The message goes if you refresh the page	No
was there anything else you want to mention	You could Make the add contacts button bigger	N/a

Issues Users Uncovered

Relevant Question	Issue	Worth fixing	Justification
does the conversion rate accurately show the conversion rate as both a ratio and a percentage	Not always, at one time the conversion rate showed 0:0 when it shouldn't have but it only happened once	No	It only happened once, could not be replicated, and the other user didn't experience it at all
were you able to remove all data that the analytics page stored.	The confirmation box came up but didn't delete the analytics data	Yes	this is an integral part of the system and the functionality works, it had just been commented out for testing purposes and forgotten about
was there anything else you want to mention	If you go to encrypt a note, and it does not pass the verification then a validation message shows. If you go straight to the contacts list page after, the validation message is on the contacts list page. The message goes if you refresh the page	No	This is just a minor bug that will rarely happen and there is nothing in the specification that said to ensure the system has no bugs
was there anything else you want to mention	You could Make the add contacts button bigger	No	The button size has been increased before and the other user thinks it is fine as it is. This could be increased for a future version.

Security Testing

Test	Enter the text ‘ <script>alert()</script> ’ into all text input forms and see if the alert dialog appears, if it does, then the site is vulnerable to a cross site scripting attack
Evidence	 <p>The screenshot shows a web application interface titled "KW CRM". Below the header is a search bar with the placeholder "Search". Inside the search bar, the user has typed the malicious script "<script>alert()</script>". To the right of the search bar is a magnifying glass icon.</p>
after entering the script into the search box the script ran	 <p>The screenshot shows a browser window with the URL "localhost:8000/contacts/" in the address bar. A modal alert box is displayed with the text "localhost:8000 says" and an "OK" button. This indicates that the injected JavaScript was executed.</p>
To fix this I ensured that only numbers and alphabetical characters could be entered into the search box.	
<pre> 113 114 115 // Only allows basic characters to be accepted validation done to help circumvent XSS and the user typing commas 116 [_basicCharactersOnlyLookUpCheck] () { 117 118 let message = " Ensure That The Search Value Only Contains a-z, A-Z , And 0-9 Characters "; 119 120 121 if (!Validation.checkStringIsMadeOfOnlyLowerUpperAndNumberChars(this[_subject], true)){ 122 return message; 123 } 124 if (!Validation.checkStringIsMadeOfOnlyLowerUpperAndNumberChars(this[_message], true)){ 125 return message; 126 } 127 128 return ''; 129 } 130 131 </pre>	

Scalability Testing

I will only need to test one file for scalability as all other functionality uses the same methods to add edit and delete records to the data store.

Test	Increase the number of records for client gained manually by duplicating records to 1000 records and test if the system works when I try to add a new record to the clients gained while using the system.
Evidence	<pre> 987 3um0kuvjta4iygc,2019-03-15T00:00:00+00:00,2019-03, 988 3um0kuvjta4iygx,2019-03-15T00:00:00+00:00,2019-03, 989 3um0kuvjta4izzf,2019-03-15T00:00:00+00:00,2019-03, 990 3um0kuvjta4izet,2019-03-15T00:00:00+00:00,2019-03, 991 mlwmc4222wfs0xtn81,2019-02-02T00:00:00+00:00,2019-02, 992 mlwmc4222wfs0xtn82,2019-02-02T00:00:00+00:00,2019-02, 993 mlwmc4222was0xtn82,2019-02-05T00:00:00+00:00,2019-02, 994 mlwmc4222wfs0xtn83,2019-02-04T00:00:00+00:00,2019-02, 995 mlwmc4222wfs0xtn84,2019-02-09T00:00:00+00:00,2019-02, 996 mlwmc4222wfs0xtn85,2019-02-11T00:00:00+00:00,2019-02, 997 mlwmc4222afs0xtn85,2019-02-11T00:00:00+00:00,2019-02, 998 slwmc4222wgs0xtyx,2019-03-11T00:00:00+00:00,2019-03, 999 flwmc4222dgs0xtn8u,2019-05-11T00:00:00+00:00,2019-05, 1000 glwmc4222whg0xtyx,2019-05-11T00:00:00+00:00,2019-05,</pre>

As you can see I am adding contacts as the conversion rate is increasing in the favour of clients gained and the system continued to work however there was a slight increase in time (about two seconds) for the page to load.

Conversion Rate This Month	277 : 18 93%
Conversion Rate This Month	139 : 9 93%
Pass	

