

SWANSEA UNIVERSITY

MENG COMPUTING

CSM14 - INDIVIDUAL PROJECT

Testing Document

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1 Outline

Throughout the development period of this project, testing played a vital role in making sure that what I was writing was correct. The methods I used to test the code in the services layer and the presentation layer differed. For the services layer I was able to take advantage of the 'WCF Test Client' to test the services I had written. But a test client was not available to test the controllers in the presentation layer.

As previously mentioned, I utilised the 'WCF Test Client' to test my web services. The test client is provided with Visual Studio is a GUI tool that enables a developer to test a service by inputting the required parameters and submitting the request. When the service responds, the developer is presented with the response returned. This tool made testing the WCF services I had written really simple. I was able to test each publicly exposed method with a variety of different parameters and view the response to check that they functioned correctly.

To test the presentation layer of the application, I mainly used manual testing. What I mean by this is, I would interact with the application through the user interface and make sure the expected result was achieved. I was able to do this because the services had been tested so I knew they were correct, all I had to do was make sure that the presentation layer was communicating correctly with the services.

Once the system had been developed and was deemed to be complete, I undertook thorough acceptance testing. Performing acceptance testing was required to make sure that the system that has been developed matches up to the specification. This was the most important testing phase because, if the system did not meet the specification then the project would not be classed as a success. To carry out the acceptance testing, I developed an extensive test suite that was designed to cover to each specification item. Each test case in the test suite has been given an identifier, a list of specification IDs stating which specification items the test covers, a description, acceptance criterion and a *PASS* or *FAIL* outcome. Regarding the tests that failed, a description was provided explaining why the test case failed. This document provides the test suite that was developed to test the system against its specification. There is also a brief explanation, at the end of the document, of what I plan to do with any test cases that have failed.

2 Testing Results

2.1 Diary

This section of the document includes the tests that cover the specification items that were listed in the *Diary* section of the *Specification Document*.

Test ID: T-DI-1
Asserts Specification(s): S-DI-1
Description: Tests whether a new job record is created in the database with no repeat details.
Acceptance Criterion: <ul style="list-style-type: none"> • A record is added to the job table. • The record contains the correct information.
Result: PASS

Test ID: T-DI-2
Asserts Specification(s): S-DI-1, S-DI-3
Description: Tests whether a new job record is created in the database with repeat details.
Acceptance Criterion: <ul style="list-style-type: none"> • A record is added to the job table for the main job. • Job records are added to the job table that satisfy the repeat details. • The record contains the correct information.
Result: PASS

Test ID: T-DI-3
Asserts Specification(s): S-DI-2
Description: Checks the allocation details for a job are updated correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The allocation details held for a particular job get updated to match the new details provided.
Result: PASS

Test ID: T-DI-4
Asserts Specification(s): S-DI-2
Description: Checks the booked times for a job are updated correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The booked times held for a particular job get updated to match the new times provided.
Result: PASS

Test ID: T-DI-5
Asserts Specification(s): S-DI-2
Description: Checks the signature status is updated correctly with regards to whether or not a signature is required for a particular job.
Acceptance Criterion: <ul style="list-style-type: none"> • The signature status in the database matches the new status that was provided.
Result: PASS

Test ID: T-DI-6
Asserts Specification(s): S-DI-2
Description: Checks the office comments are updated correctly for a particular job.
Acceptance Criterion: <ul style="list-style-type: none"> • The office comments held in the database for a particular job matches the new comments that were provided.
Result: PASS

Test ID: T-DI-7
Asserts Specification(s): S-DI-2
Description: Checks whether the actual job times are updated correctly for a particular job.
Acceptance Criterion: <ul style="list-style-type: none"> • The actual start time held in the database for a job matches the new actual start time. • The actual finish time held in the database for a job matches the new actual finish time.
Result: PASS

Test ID: T-DI-8
Asserts Specification(s): S-DI-4
Description: Checks whether a job gets removed from the database that is not linked to an invoice.
Acceptance Criterion: <ul style="list-style-type: none"> • The job no longer exists in the database.
Result: PASS

Test ID: T-DI-9
Asserts Specification(s): S-DI-4
Description: Checks whether a job does not get removed from the database, when it is linked to an invoice, when a request is made to delete it.
Acceptance Criterion: <ul style="list-style-type: none"> • The job does not get removed from the database.
Result: PASS

Test ID: T-DI-10
Asserts Specification(s): S-DI-5
Description: Checks whether the details for a given job are returned correctly
Acceptance Criterion: <ul style="list-style-type: none"> • The details returned must match those held in the database.
Result: PASS

Test ID: T-DI-11
Asserts Specification(s): S-DI-6
Description: Tests whether all jobs relating to a specific customer are returned.
Acceptance Criterion: <ul style="list-style-type: none"> • All jobs that are linked to the specified customer are returned.
Result: PASS

Test ID: T-DI-12
Asserts Specification(s): S-DI-7
Description: Tests whether all jobs booked on a specific date are returned.
Acceptance Criterion: <ul style="list-style-type: none"> • All jobs booked on the specified date are returned.
Result: PASS

Test ID: T-DI-13
Asserts Specification(s): S-DI-8
Description: Tests whether all jobs that have been assigned to a specific operator are returned.
Acceptance Criterion: <ul style="list-style-type: none"> • All jobs that have been assigned to the specified operator are returned.
Result: PASS

Test ID: T-DI-14
Asserts Specification(s): S-DI-9
Description: Tests whether all jobs that have been assigned to a specific subcontractor are returned.
Acceptance Criterion: <ul style="list-style-type: none"> • All jobs that have been assigned to the specified subcontractor are returned.
Result: PASS

Test ID: T-DI-15
Asserts Specification(s): S-DI-10
Description: Tests whether all jobs relating to a specific site are returned.
Acceptance Criterion: <ul style="list-style-type: none"> • All jobs that are related to the specified site are returned.
Result: PASS

Test ID: T-DI-16
Asserts Specification(s): S-DI-11
Description: Tests whether all jobs relating to a specific plant item are returned.
Acceptance Criterion: <ul style="list-style-type: none"> • All jobs that are related to the specified plant item are returned.
Result: PASS

Test ID: T-DI-17
Asserts Specification(s): S-DI-12
Description: Tests whether it is possible to construct a receipt as a PDF so that it can be printed locally or sent via email.
Acceptance Criterion: <ul style="list-style-type: none"> • A PDF receipt is generated that contains all the required information about a job.
Result: FAIL - This functionality has not been implemented due to time constraints.

2.2 Maintenance

This section of the document includes the tests that cover the specification items that were listed in the *Maintenance* section of the *Specification Document*.

2.2.1 Equipment and Services

Test ID: T-MAES-1
Asserts Specification(s): S-MAES-1
Description: Tests whether it is possible to create a plant type, using a name and a description.
Acceptance Criterion: <ul style="list-style-type: none"> • A plant type is added to the database that matches the details provided.
Result: PASS

Test ID: T-MAES-2
Asserts Specification(s): S-MAES-2
Description: Tests whether it is possible to retrieve the details of a plant type.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding details held in the database of the plant type specified are returned.
Result: PASS

Test ID: T-MAES-3
Asserts Specification(s): S-MAES-3
Description: Tests whether it is possible to update the details of a plant type.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding details held in the database of the plant type specified are updated correctly.
Result: PASS

Test ID: T-MAES-4
Asserts Specification(s): S-MAES-4
Description: Checks whether a plant type gets removed from the database.
Acceptance Criterion: <ul style="list-style-type: none"> • The plant type no longer exists in the database.
Result: PASS

Test ID: T-MAES-5
Asserts Specification(s): S-MAES-5
Description: Tests whether it is possible to create a plant item.
Acceptance Criterion: <ul style="list-style-type: none"> • A record is added the relevant database table. • The plant record contains all of the details provided.
Result: PASS

Test ID: T-MAES-6
Asserts Specification(s): S-MAES-6
Description: Tests whether it is possible to update the details of a plant item.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding details held in the database of the plant item specified are updated correctly.
Result: PASS

Test ID: T-MAES-7
Asserts Specification(s): S-MAES-7
Description: Tests whether it is possible to create a maintenance schedule for a particular plant item.
Acceptance Criterion: <ul style="list-style-type: none"> • A record is added to the database which contains the maintenance details for the specified plant item.
Result: PASS

Test ID: T-MAES-8
Asserts Specification(s): S-MAES-8
Description: Tests whether it is possible to create an event for a particular plant item.
Acceptance Criterion: <ul style="list-style-type: none"> • A record is added to the database which contains the event details for the specified plant item.
Result: PASS

Test ID: T-MAES-9
Asserts Specification(s): S-MAES-9
Description: Checks whether it is possible to retrieve all events associated with a particular plant item.
Acceptance Criterion: <ul style="list-style-type: none"> • All events held in the database that relate to a particular plant item are returned.
Result: PASS

Test ID: T-MAES-10
Asserts Specification(s): S-MAES-10
Description: Tests whether it is possible to update the details of a plant item.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding details held in the database of the plant item specified are updated correctly.
Result: PASS

Test ID: T-MAES-11
Asserts Specification(s): S-MAES-11
Description: Tests whether it is possible to retrieve the details of a plant item.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding details held in the database of the plant item specified are returned.
Result: PASS

Test ID: T-MAES-12
Asserts Specification(s): S-MAES-12
Description: Tests whether it is possible to update the list of plant items stored on the PDAs.
Acceptance Criterion: <ul style="list-style-type: none"> • An XML file is uploaded to the correct directory of the FTP server. • The XML file contains details of all the plant items stored in the database. • The format of the XML file must match the ones being generated by the middleware currently to enable the PDAs to parse them.
Result: PASS

Test ID: T-MAES-13
Asserts Specification(s): S-MAES-13
Description: Checks whether a plant item gets removed from the database.
Acceptance Criterion: <ul style="list-style-type: none"> • The plant item no longer exists in the database.
Result: PASS

Test ID: T-MAES-14
Asserts Specification(s): S-MAES-14
Description: Tests whether it is possible to create a service.
Acceptance Criterion: <ul style="list-style-type: none"> • A service is added to the database that matches the details provided.
Result: PASS

Test ID: T-MAES-15
Asserts Specification(s): S-MAES-15
Description: Tests whether it is possible to update the details that specify what plant items are required to carry out a service.
Acceptance Criterion: <ul style="list-style-type: none"> • The details held in the database that specify what items of plant are required for a service are updated. • The updated details match the details provided.
Result: PASS

Test ID: T-MAES-16
Asserts Specification(s): S-MAES-16
Description: Checks whether a service gets removed from the database.
Acceptance Criterion: <ul style="list-style-type: none"> • The service no longer exists in the database.
Result: PASS

Test ID: T-MAES-17
Asserts Specification(s): S-MAES-17
Description: Tests whether it is possible to update the details of a service.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding details held in the database for the service specified are updated correctly.
Result: PASS

Test ID: T-MAES-18
Asserts Specification(s): S-MAES-18
Description: Tests whether it is possible to retrieve the details of a service.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding details held in the database for the service specified are returned.
Result: PASS

2.2.2 Workforce

Test ID: T-MAW-1
Asserts Specification(s): S-MAW-1
Description: Tests whether it is possible to create a user for the system.
Acceptance Criterion: <ul style="list-style-type: none"> • A new user record is added to the user table of the database. • The record contains all the details that were provided.
Result: PASS

Test ID: T-MAW-2
Asserts Specification(s): S-MAW-2
Description: Checks whether the address linked with a user is updated correctly. This is with regards to a different address rather than the details of a specific address.
Acceptance Criterion: <ul style="list-style-type: none"> • The address associated with the specified user is updated correctly and matches the address specified.
Result: PASS

Test ID: T-MAW-3
Asserts Specification(s): S-MAW-3
Description: Tests whether the details of a specific user are retrieved correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The user details for the specified user held in the database are returned.
Result: PASS

Test ID: T-MAW-4
Asserts Specification(s): S-MAW-4
Description: Tests whether the details of a specific user are updated correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The user details for the specified user held in the database must match the details provided.
Result: PASS

Test ID: T-MAW-5
Asserts Specification(s): S-MAW-5
Description: Tests whether a specific user can be removed from the system.
Acceptance Criterion: <ul style="list-style-type: none"> • The user no longer exists in the database.
Result: PASS

Test ID: T-MAW-6
Asserts Specification(s): S-MAW-6
Description: Tests whether it is possible to add a new operator to the system.
Acceptance Criterion: <ul style="list-style-type: none"> • A new operator record is added to the database. • The details held in the database for the new operator match the details provided.
Result: PASS

Test ID: T-MAW-7
Asserts Specification(s): S-MAW-7
Description: Tests whether the details corresponding to a particular operators availability is updated correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The availability details for the specified operator are updated. • The updated details match the details provided.
Result: PASS

Test ID: T-MAW-8
Asserts Specification(s): S-MAW-8
Description: Tests whether the details corresponding to a particular operators availability can be retrieved correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The details corresponding to the specified operators availability are returned.
Result: PASS

Test ID: T-MAW-9
Asserts Specification(s): S-MAW-9
Description: Checks whether the details stating what plant types an operator can use are updated correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • A record is created in the database for each plant item that specifies a particular operator can use that item of plant.
Result: PASS

Test ID: T-MAW-10
Asserts Specification(s): S-MAW-10
Description: Tests whether the details corresponding to a particular operator can be retrieved correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The details corresponding to the specified operator are returned.
Result: PASS

Test ID: T-MAW-11
Asserts Specification(s): S-MAW-11
Description: Tests whether it is possible to update the details related to a specific operator.
Acceptance Criterion: <ul style="list-style-type: none"> • The correct operator record in the database is updated. • The details held in the database for the specified operator match the new details provided.
Result: PASS

Test ID: T-MAW-12
Asserts Specification(s): S-MAW-12
Description: Tests whether a specific operator can be removed from the system.
Acceptance Criterion: <ul style="list-style-type: none"> • The record corresponding to the operator specified no longer exists in the database.
Result: PASS

Test ID: T-MAW-13
Asserts Specification(s): S-MAW-13
Description: Tests whether it is possible to update the list of operators stored on the PDAs.
Acceptance Criterion: <ul style="list-style-type: none"> • An XML file is uploaded to the correct directory of the FTP server. • The XML file contains details of all the operators stored in the database. • The format of the XML file must match the ones being generated by the middleware currently to enable the PDAs to parse them.
Result: PASS

Test ID: T-MAW-14
Asserts Specification(s): S-MAW-14
Description: Tests whether it is possible to create a new subcontractor.
Acceptance Criterion: <ul style="list-style-type: none"> • A subcontractor record is added to the correct table in the database. • The details of the record matches the details provided.
Result: PASS

Test ID: T-MAW-15
Asserts Specification(s): S-MAW-15
Description: Checks whether the details stating what plant types a subcontractor can provide are updated correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • A record is created in the database for each plant item that specifies a particular subcontractor can use that item of plant.
Result: PASS

Test ID: T-MAW-16
Asserts Specification(s): S-MAW-16
Description: Checks whether the details related to a specific subcontractor can be retrieved correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding details held in the database for the subcontractor are returned.
Result: PASS

Test ID: T-MAW-17
Asserts Specification(s): S-MAW-17
Description: Tests whether it is possible to update the details related to a specific subcontractor.
Acceptance Criterion: <ul style="list-style-type: none"> • The correct subcontractor record in the database is updated. • The details held in the database for the specified subcontractor match the new details provided.
Result: PASS

Test ID: T-MAW-18
Asserts Specification(s): S-MAW-18
Description: Tests whether a specific subcontractor can be removed from the system.
Acceptance Criterion: <ul style="list-style-type: none"> • The record corresponding to the subcontractor specified no longer exists in the database.
Result: PASS

2.2.3 Customers

Test ID: T-MAC-1
Asserts Specification(s): S-MAC-1
Description: Tests whether it is possible to create a new customer.
Acceptance Criterion: <ul style="list-style-type: none"> • A customer record is added to the correct table in the database. • The details of the record matches the details provided.
Result: PASS

Test ID: T-MAC-2
Asserts Specification(s): S-MAC-2
Description: Tests whether it is possible to create custom service rates for a specific customer and service.
Acceptance Criterion: <ul style="list-style-type: none"> • A customer rate record is added to the correct table in the database. • The details of the record matches the details provided.
Result: PASS

Test ID: T-MAC-3
Asserts Specification(s): S-MAC-3
Description: Tests whether it is possible to update the details related to a specific customer.
Acceptance Criterion: <ul style="list-style-type: none"> • The correct customer record in the database is updated. • The details held in the database for the specified customer match the new details provided.
Result: PASS

Test ID: T-MAC-4
Asserts Specification(s): S-MAC-4
Description: Checks whether the details related to a specific customer can be retrieved correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding details held in the database for the customer are returned.
Result: PASS

Test ID: T-MAC-5
Asserts Specification(s): S-MAC-4
Description: Tests whether a specific customer can be removed from the system.
Acceptance Criterion: <ul style="list-style-type: none"> • The record corresponding to the customer specified no longer exists in the database.
Result: PASS

Test ID: T-MAC-6
Asserts Specification(s): S-MAC-6
Description: Tests whether a regional office can be created.
Acceptance Criterion: <ul style="list-style-type: none"> • A regional office record is added to the correct table in the database. • The details of the record matches the details provided.
Result: PASS

Test ID: T-MAC-7
Asserts Specification(s): S-MAC-7, S-MAC-8
Description: Tests whether a site can be created for a customer.
Acceptance Criterion: <ul style="list-style-type: none"> • A record is added to the database specifying a particular address is being used as a site. • Another record is added which holds the details of the site. • The details stored in the database are correct.
Result: PASS

Test ID: T-MAC-9
Asserts Specification(s): S-MAC-9
Description: Tests whether the link between a site and a customer can be removed.
Acceptance Criterion: <ul style="list-style-type: none"> • The customer site details are removed from the database. • The site still exists just without the link with the customer.
Result: PASS

Test ID: T-MAC-10
Asserts Specification(s): S-MAC-10
Description: Tests whether the address linked with a site can be updated.
Acceptance Criterion: <ul style="list-style-type: none"> • The address associated with the site is updated. • The updated address-site link points to the correct address.
Result: PASS

Test ID: T-MAC-11
Asserts Specification(s): S-MAC-11
Description: Tests whether a customers site details can be updated.
Acceptance Criterion: <ul style="list-style-type: none"> • The correct site record is updated. • The updated details match the new details provided.
Result: PASS

Test ID: T-MAC-12
Asserts Specification(s): S-MAC-12
Description: Tests whether the details of a particular site can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • The correct details, held in the database, corresponding to the site specified are returned.
Result: PASS

Test ID: T-MAC-13
Asserts Specification(s): S-MAC-13
Description: Tests whether a particular site can be removed from the system.
Acceptance Criterion: <ul style="list-style-type: none"> • The specified site no longer exists in the database.
Result: PASS

2.2.4 Administration

Test ID: T-MAA-1
Asserts Specification(s): S-MAA-1
Description: Tests whether it is possible to create an order for a customer in the system.
Acceptance Criterion: <ul style="list-style-type: none"> • A new order record is added to the orders table of the database. • The record contains all the details that were provided.
Result: PASS

Test ID: T-MAA-2
Asserts Specification(s): S-MAA-2
Description: Tests whether it is possible to update the details corresponding to a particular order in the system.
Acceptance Criterion: <ul style="list-style-type: none"> • The correct order record is updated in the database. • The details held in the record match the new details provided.
Result: FAIL - This functionality has been implemented. However, after discussion with Nick Beckett it was decided that it should not be possible to update an order once it has been created. For this reason this functionality has been removed.

Test ID: T-MAA-3
Asserts Specification(s): S-MAA-3
Description: Checks whether the details related to a specific order can be retrieved correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding details held in the database for the order are returned.
Result: PASS

Test ID: T-MAA-4
Asserts Specification(s): S-MAA-4
Description: Test whether a specific order can be removed from the system.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding order no longer exists in the database.
Result: PASS

Test ID: T-MAA-5
Asserts Specification(s): S-MAA-5
Description: Tests whether it is possible to create an address in the system.
Acceptance Criterion: <ul style="list-style-type: none"> • A new address record is added to the addresses table of the database. • The record correctly stores all the details that were provided.
Result: PASS

Test ID: T-MAA-6
Asserts Specification(s): S-MAA-6
Description: Tests whether it is possible to update the details corresponding to a particular address in the system.
Acceptance Criterion: <ul style="list-style-type: none"> • The correct address record is updated in the database. • The details stored in the record match the new details provided.
Result: PASS

Test ID: T-MAA-7
Asserts Specification(s): S-MAA-7
Description: Tests whether a list containing all the addresses held in the database can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • A list of addresses is returned. • The list returned contains the details for all addresses stored in the database.
Result: PASS

Test ID: T-MAA-8
Asserts Specification(s): S-MAA-8
Description: Tests whether a list containing all the associations of an address can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • A list containing all associations with a particular address is returned. • The list returned contains the details of all associations for that address stored in the database.
Result: PASS

Test ID: T-MAA-9
Asserts Specification(s): S-MAA-9
Description: Tests whether a list containing all the addresses held in the database which are not linked can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • A list of addresses is returned. • The list returned contains the details of all the addresses that are not linked.
Result: PASS

Test ID: T-MAA-10
Asserts Specification(s): S-MAA-10
Description: Test whether a specific address, that is not linked, can be removed from the system.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding address no longer exists in the database.
Result: PASS

Test ID: T-MAA-11
Asserts Specification(s): S-MAA-10
Description: Test whether a specific address, that is linked, can not be removed from the system.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding address still exists in the database after a request to delete it has been made.
Result: PASS

2.2.5 In the Field

Test ID: T-MAF-1
Asserts Specification(s): S-MAF-1
Description: Tests whether a device can be added to the system correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • A new device record is added to the relevant table of the database. • The record contains all the details that were provided.
Result: PASS

Test ID: T-MAF-2
Asserts Specification(s): S-MAF-2
Description: Tests whether it is possible to update the details corresponding to a particular device in the system.
Acceptance Criterion: <ul style="list-style-type: none"> • The correct device record is updated in the database. • The details held in the record match the new details provided.
Result: PASS

Test ID: T-MAF-3
Asserts Specification(s): S-MAF-3
Description: Test whether a specific device can be removed from the system.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding device no longer exists in the database.
Result: PASS

Test ID: T-MAF-4
Asserts Specification(s): S-MAF-4
Description: Checks whether the details related to a specific device can be retrieved correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The corresponding details held in the database for the specified device are returned.
Result: PASS

Test ID: T-MAF-5
Asserts Specification(s): S-MAF-5
Description: Checks whether a device can be assigned to an operator.
Acceptance Criterion: <ul style="list-style-type: none"> • A new record is created stating that the specified operator has been allocated the specified device.
Result: PASS

Test ID: T-MAF-6
Asserts Specification(s): S-MAF-6
Description: Tests whether a device-operator allocation can be removed.
Acceptance Criterion: <ul style="list-style-type: none"> • The record stating the specified operator has been assigned the stated device no longer exists.
Result: PASS

Test ID: T-MAF-7
Asserts Specification(s): S-MAF-7
Description: Tests whether a device-plant item allocation can be removed.
Acceptance Criterion: <ul style="list-style-type: none"> • The record stating the specified operator has been assigned the stated plant item no longer exists.
Result: PASS

2.2.6 Other

Test ID: T-MAO-1
Asserts Specification(s): S-MAO-1
Description: Tests whether a list containing all the jobs held in the database which are finished, require a signature but have not yet been signed for, can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • A list of jobs is returned. • The list returned contains the details of all the jobs that satisfy the condition stated in the above description.
Result: PASS

Test ID: T-MAO-2
Asserts Specification(s): S-MAO-2
Description: Tests whether a job that needs to be signed for can be sent to an operator to collect a signature.
Acceptance Criterion: <ul style="list-style-type: none"> • The specified job record is updated in the database stating that the job has been sent to a particular operator to collect a signature. • An XML file is sent to the operators directory on the FTP server. • The XML conforms to the same format as the XML already being generated by the middleware application.
Result: PASS

Test ID: T-MAO-3
Asserts Specification(s): S-MAO-3
Description: Tests whether a job that needs to be signed for can be marked as not requiring a signature.
Acceptance Criterion: <ul style="list-style-type: none"> • The specified job record is updated in the database stating that the job no longer requires a signature. The signature status field must be set to 1 and the signature ID field must be set to SIG0.
Result: PASS

2.3 Mapping

This section of the document includes the tests that cover the specification items that were listed in the *Mapping* section of the *Specification Document*.

Test ID: T-MAP-1
Asserts Specification(s): S-MAP-1
Description: Tests whether the most recent GPS coordinates associated with an operator can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • The most recent GPS coordinates that have been stored in the database that are associated with the specified operator are returned.
Result: PASS

Test ID: T-MAP-2
Asserts Specification(s): S-MAP-2
Description: Tests whether GPS coordinates, that were recorded within a given timespan, associated with an operator can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • A list of GPS coordinates are returned. • The coordinates are associated with the specified operator. • The date at which the coordinates were recorded fall within the given time span.
Result: PASS

Test ID: T-MAP-3
Asserts Specification(s): S-MAP-3
Description: Tests whether the most recent GPS coordinates associated with a plant item can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • The most recent GPS coordinates that have been stored in the database that are associated with the specified plant item are returned.
Result: PASS

Test ID: T-MAP-4
Asserts Specification(s): S-MAP-4
Description: Tests whether GPS coordinates, that were recorded within a given timespan, associated with a plant item can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • A list of GPS coordinates are returned. • The coordinates are associated with the specified plant item. • The date at which the coordinates were recorded fall within the given time span.
Result: PASS

Test ID: T-MAP-5
Asserts Specification(s): S-MAP-5
Description: Tests whether the most recent GPS coordinates associated with each operator can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • A list containing the most recent GPS coordinates for each operator in the system is returned.
Result: PASS

Test ID: T-MAP-6
Asserts Specification(s): S-MAP-6
Description: Tests whether the most recent GPS coordinates associated with each plant item can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • A list containing the most recent GPS coordinates for each plant item in the system is returned.
Result: PASS

Test ID: T-MAP-7
Asserts Specification(s): S-MAP-7
Description: Checks if an operators current location can be retrieved. The location must have been recorded within 24 hours.
Acceptance Criterion: <ul style="list-style-type: none"> • A list containing GPS coordinates that have been recorded within 24 hours. • The coordinates must be associated with the specified operator.
Result: PASS

Test ID: T-MAP-8
Asserts Specification(s): S-MAP-8
Description: Checks if the current location of a plant item can be retrieved. The location must have been recorded within 24 hours.
Acceptance Criterion: <ul style="list-style-type: none"> • A list containing GPS coordinates that have been recorded within 24 hours. • The coordinates must be associated with the specified plant item.
Result: PASS

Test ID: T-MAP-9
Asserts Specification(s): S-MAP-9
Description: Tests whether all GPS coordinates associated with a job can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • A list containing GPS coordinates are returned. • The list must contain all coordinates that were recorded for the specified job. • The coordinates must be associated with the specified job.
Result: PASS

Test ID: T-MAP-10
Asserts Specification(s): S-MAP-10
Description: Tests whether the GPS coordinates of where an operator has logged in or out of their device, between two dates, can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none">• A list containing GPS coordinates are returned.• The list must contain all coordinates that were recorded between the two dates specified.• The coordinates must be associated with the operator and their device.
Result: PASS

Test ID: T-MAP-11
Asserts Specification(s): S-MAP-11
Description: Tests whether the GPS coordinates associated with an address can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none">• GPS coordinates are returned.• The GPS coordinates must be associated with the address specified.
Result: PASS

2.4 Invoicing

This section of the document includes the tests that cover the specification items that were listed in the *Invoicing* section of the *Specification Document*.

Test ID: T-IN-1
Asserts Specification(s): S-IN-1, S-IN-2
Description: Tests whether an invoice can be created correctly for a single job.
Acceptance Criterion: <ul style="list-style-type: none"> • A record is added to the invoice table. • The invoice details stored in the record match the details provided. • A record is added to the invoice jobs table stating that the job that has been invoiced is part of the invoice that has been created.
Result: PASS

Test ID: T-IN-2
Asserts Specification(s): S-IN-1, S-IN-2
Description: Tests whether an invoice can be created correctly for several jobs.
Acceptance Criterion: <ul style="list-style-type: none"> • A record is added to the invoice table. • The invoice details stored in the record match the details provided. • A record is added to the invoice jobs table for each job being invoiced, stating that the job that has been invoiced is part of the invoice that has been created.
Result: PASS

Test ID: T-IN-3
Asserts Specification(s): S-IN-3
Description: Tests whether it is possible to get a list of jobs that are ready to be invoiced but are not yet associated with an invoice.
Acceptance Criterion: <ul style="list-style-type: none"> • A list of jobs is returned. • The list contains all jobs that are ready to be invoiced.
Result: PASS

Test ID: T-IN-4
Asserts Specification(s): S-IN-4
Description: Tests whether it is possible to view a signature capture that has been recorded for a particular job.
Acceptance Criterion: <ul style="list-style-type: none"> • A signature capture is returned. • The signature must have been recorded for the specified job.
Result: FAIL - Due to time constraints it was not possible to fulfil this specification item.

Test ID: T-IN-5
Asserts Specification(s): S-IN-5
Description: Tests whether it is possible to obtain an invoice in PDF format.
Acceptance Criterion: <ul style="list-style-type: none"> • A PDF file is returned. • The PDF must contain the details for the specified invoice
Result: FAIL - Due to time constraints it was not possible to fulfil this specification item.

Test ID: T-IN-6
Asserts Specification(s): S-IN-6
Description: Checks whether the details of an invoice can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • The details stored in the database associated with the specified invoice are returned.
Result: PASS.

Test ID: T-IN-7
Asserts Specification(s): S-IN-7
Description: Checks whether a job can be marked as invoiced, without creating an invoice.
Acceptance Criterion: <ul style="list-style-type: none"> • A record is added to the invoice jobs table associating the specified job with the dummy invoice. • The associated invoice ID must be INV001.
Result: PASS.

Test ID: T-IN-8
Asserts Specification(s): S-IN-8
Description: Tests whether it is possible to create an invoice payment for a particular invoice.
Acceptance Criterion: <ul style="list-style-type: none"> • A new record is added to the invoice paid table of the database. • The record details match the details provided.
Result: PASS

Test ID: T-IN-9
Asserts Specification(s): S-IN-9
Description: Tests whether it is possible to update an invoice payment.
Acceptance Criterion: <ul style="list-style-type: none"> • The correct payment record is updated. • The details associated with the invoice payment are updated to match the new details provided.
Result: PASS

Test ID: T-IN-10
Asserts Specification(s): S-IN-10
Description: Tests whether it is possible to delete an invoice payment.
Acceptance Criterion: <ul style="list-style-type: none">• The corresponding payment record no longer exists in the invoice paid table.
Result: PASS

2.5 Settings

This section of the document includes the tests that cover the specification items that were listed in the *Settings* section of the *Specification Document*.

Test ID: T-ST-1
Asserts Specification(s): S-ST-1
Description: Checks whether the company details held in the database are updated correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The company details held in the database must match the updated details provided.
Result: PASS.

Test ID: T-ST-2
Asserts Specification(s): S-ST-2
Description: Checks whether the value used for VAT held in the database is updated correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The VAT value held in the database must match the new value provided.
Result: PASS.

Test ID: T-ST-3
Asserts Specification(s): S-ST-3
Description: Checks whether the value used for minimum job duration held in the database is updated correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The minimum job duration value held in the database must match the new value provided.
Result: PASS.

Test ID: T-ST-4
Asserts Specification(s): S-ST-4
Description: Checks whether the value used for maximum job duration held in the database is updated correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The maximum job duration value held in the database must match the new value provided.
Result: PASS.

Test ID: T-ST-5
Asserts Specification(s): S-ST-5
Description: Checks whether the boundary values for weekend work held in the database are updated correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The weekend boundary values held in the database must match the new values provided.
Result: PASS.

Test ID: T-ST-6
Asserts Specification(s): S-ST-6
Description: Checks whether the boundary values for evening work held in the database are updated correctly.
Acceptance Criterion: <ul style="list-style-type: none"> • The evening boundary values held in the database must match the new values provided.
Result: PASS.

Test ID: T-ST-7
Asserts Specification(s): S-ST-7
Description: Tests whether all vehicles that require some form of maintenance within a given number of weeks are returned.
Acceptance Criterion: <ul style="list-style-type: none"> • All vehicles held in the database that require maintenance within the specified number of weeks are returned.
Result: PASS.

Test ID: T-ST-8
Asserts Specification(s): S-ST-8
Description: Checks whether the database being used replicates the schema already being used by the desktop application.
Acceptance Criterion: <ul style="list-style-type: none"> • The database schema must match the database schema currently being used for the desktop application.
Result: PASS.

Test ID: T-ST-9
Asserts Specification(s): S-ST-9
Description: Checks whether the application communicates the middleware adequately.
Acceptance Criterion: <ul style="list-style-type: none"> • XML files must be uploaded to their relevant folders on the FTP server. • The middleware must be able to read the XML files. • The XML files must follow the same format that is already being used.
Result: PASS.

2.6 Messaging

This section of the document includes the tests that cover the specification items that were listed in the *Messaging* section of the *Specification Document*.

Test ID: T-MES-1
Asserts Specification(s): S-MES-1
Description: Tests whether a message can be sent to a list of operatives.
Acceptance Criterion: <ul style="list-style-type: none"> • A message record for each operator in the list of operatives is added to the database. • An XML message file is uploaded to the FTP space for each of the operatives.
Result: PASS.

Test ID: T-MES-2
Asserts Specification(s): S-MES-2
Description: Checks whether a list of messages that have been sent by a specific operator can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • A list containing all of the messages that have been sent by the specified operator is returned.
Result: PASS.

Test ID: T-MES-3
Asserts Specification(s): S-MES-3
Description: Checks whether a list of messages that have been sent to a specific operator can be retrieved.
Acceptance Criterion: <ul style="list-style-type: none"> • A list containing all of the messages that have been sent to the specified operator is returned.
Result: PASS.

Test ID: T-MES-4
Asserts Specification(s): S-MES-4
Description: Tests whether a specific message can be removed from the database.
Acceptance Criterion: <ul style="list-style-type: none"> • The message no longer exists in the database
Result: PASS.

3 Failing Tests

Out of all of the test cases, in the test suite that was developed to test the system, only 4 failed. However, the failing tests will not have a detrimental impact on the overall functionality of the system. For three out of the four failing tests, the reason for them failing was because there was not enough time to implement the functionality that the test case was aimed at. The final test case that failed did so because the client requested that the functionality the test case was aimed to test should be removed as it was no longer required.

I do not plan to do anything to the application so that the test cases no longer fail. The main reason for this is because the failing test cases do not affect any functionality already implemented. Also, there is not enough time left to implement the missing functionality.