



DEPARTMENT OF COMPUTER ENGINEERING

TEST SPECIFICATION REPORT

QUARTETSOFT

1.Introduction.....	3
2.Test Plan.....	3
2.1 About Sofr@m.....	3
2.2 Testing Strategy.....	3
2.2.1 Black Box Testing.....	4
2.2.2 White Box Testing.....	5
2.2.3 Unit Testing.....	5
3.Test Procedure.....	6
3.1 Cash-Desk Module.....	6
3.2 Web Application Module.....	9

1. Introduction

This document gives overall information about testing procedures which have been carried out in order to ensure that sofr@m works properly. Testing techniques have been applied on all sofr@m modules which have been designed and finished so far. All features, functionality and behaviour of all these modules, web, cash desk modules, are tested. Black box, white box and unit testing techniques are decided to be applied during this testing schedule. By using three test strategies, correctness of all modules of sofr@m can be assured. sofr@m is identified and overall strategy for testing procedure is described in the further pages.

2. Test Plan

In this section particular testing techniques that are used to verify the correctness of sofr@m will be described. We will use three main testing strategies which are white box, black box and unit testing will be used during testing schedule. Under this topic software,sofr@m, to be tested will also be specified. Test plan is divided into two main subtopics which are:

- What is sofr@m?
- Testing strategy

2.1 What is sofr@m?

sofr@m is a restaurant automation system which includes an online module, a main computer module which is also called cashier module in the design, and a PDA module.

By using online module, users can register to the system and then after registration users can login to the system via internet and can make new reservations, change their reservation information, make online orders or update their user profiles by just using the online module of the system.

Main computer module arrange general restaurant information such as stock management, employee management or order management. Employees using this module can have an overall opinion about the restaurant working order.

Waiters use PDA module in order to take orders from tables. With this module, orders can be transmitted to the kitchen and the status of the order can be seen from the PDA. This module is for the works in the restaurant.

2.2 Testing Strategy

According to the definition of software project, three main testing techniques will be used during testing process. These techniques are white box, black box and unit testing techniques will be used and described under this topic.

2.2.1 Black Box Testing

This testing technique is done without the knowledge of the works that are carried out in the inner parts of the software. So just inputs and expected outputs are known, not the ways that are going over through the software process. Black box testing can be considered testing with respect to the specifications, no other knowledge of the software is necessary.

Here is a list of the advantages of black box testing:

- It is more effective on larger units of code
- Tester needs no knowledge of implementation, including specific programming languages
- Tester and programmer are independent of each other

- Tests are done from a user's point of view
- It will help to expose any ambiguities or inconsistencies in the specifications
- Test cases can be designed as soon as the specifications are complete

And those are the disadvantages of black box testing:

- Only a small number of possible inputs can actually be tested, to test every possible input stream would take nearly forever
- Without clear and concise specifications, test cases are hard to design
- There may be unnecessary repetition of test inputs if the tester is not informed of test cases the programmer has already tried
- It may leave many program paths untested
- It cannot be directed toward specific segments of code which may be very complex (and therefore more error prone)

Testing techniques and strategies for black box testing are

- black box testing should make use of randomly generated inputs, to eliminate any guess work by the tester as to the methods of the function
- data outside of the specified input range should be tested to check the robustness of the program
- boundary cases should be tested to make sure the highest and lowest allowable inputs produce proper output
- the number zero should be tested when numerical data is to be input
- stress testing should be performed, especially with real time systems
- crash testing should be performed to see what it takes to bring the system down
- test monitoring tools should be used whenever possible to track which tests have already been performed and the outputs of these tests to avoid repetition and to aid in the software maintenance .

2.2.2 White Box Testing

This testing technique examines the program structure and derives test data from the program logic. This testing is called white box since white boxes are considered opaque and do not really permit visibility into the code.

There are five types of white box testing which are static and dynamic analysis (execution of the software is not necessary in static analysis, dynamic analysis is what is generally considered as testing, involves running the system), statement coverage (every statement is executed at least once), branch coverage (all branches are tested at least once by applying a series of tests), path coverage (all paths are tested), all definition use path coverage (all paths between definition and use of that definition are stated and tested).

Advantages of white box testing:

- forces test developer to reason carefully about implementation
- approximates the partitioning done by execution equivalence
- reveals errors in "hidden" code
- beneficent side-effects
- optimizations

Disadvantages are

- expensive
- miss cases omitted in the code

2.2.3 Unit Testing

Unit Testing is the earliest stage of testing and is most cost effective testing stage in removing bugs. Units are the smallest building blocks of software.

Advantages of unit testing are

Unit Testing plays a major role in the total testing efforts

- Be able to test parts of a project with out waiting for the other parts to be available
- Achieve parallelism in testing by being able to test and fix problems simultaneously by many engineers
- Be able to detect and remove defects at a much less cost compared to other later stages of testing
- Be able to take advantage of a number of formal testing techniques available for unit testing
- Simplify debugging by limiting to a small unit the possible code areas in which to search for bugs
- Be able to test internal conditions that are not easily reached by external inputs in the larger integrated systems
- Be able to achieve a high level of structural coverage of the code
- Avoid lengthy compile-build-debug cycles when debugging difficult problems

Disadvantages of unit testing are listed below

- Testing is monotonous, boring and repetitive
- Poor Documentation of Test cases
- Coding Drivers and Stubs
- Informal testing process
- Poor Regression Testing
- Lack of Complete Testing tools

The testing techniques may be broadly divided into three types:

- Functional Testing (catch omissions and wrong implementations)

- Structural Testing (catch surprises and wrong implementations)
- Heuristic or Intuitive Testing (catch all types of defects but is effective only when complementing the systematic types of functional and structural testing techniques.)

3. Test Procedure

As explained above, unit testing white box testing and black box testing has been used. Let us start with unit testing.

3.1 Cash-Desk Module

Login Window

First of all the window should have a focus and receive input from the keyboard. User should have access to the program only if he/she supplies right username password combination which is essential for the security. What's more is being able to enter the program without having to use the mouse.

It is a problem if the user cannot reach login button which lies on the lower left corner of the screen by pressing tab button. An important note on user privacy would be indicating the type of the incoming session since there are two types of users which are super user login and normal user login. Thus cashier using this program should be able to change user type before logging into system and have access to the field that he/she is permitted only.

Super User Module:

As the name indicates, this is the dominant cashdesk module. Cashier who is granted to this field should be able to use the advantages that were given. Submodules of this part are as follow:

Stock Management Window:

Efficient stock management is very important for user satisfaction, thus access to this window is only given to super user that increases his/her responsibility. Frankly, any access to this window by any normal user is a means of security deficit.

When super user having process on this window selects and stock items information about that item should appear immediately on the screen ready for any editing issue. Any information inconsistency, like name conflict, or nonappearance of data is a means of error. In addition cashier should be able to add and delete stock items, see suppliers and buy new items.

Restaurant Management Window:

This window consists of two main sections. First section contains information about employees whereas second contains information about the restaurant. There are four subsections in employee part which are jobs, job details, add new job and employees with the job waiter respectively from left to right and up to bottom. First subsection displays job types and if the user selects one of them second subsection should display the information about that job type and names of the employees should appear in the fourth one. Third subsection is for adding new job types when needed.

In the second section detailed information, restaurant name contact address, phone number..., about the restaurant is given.

User Management Window:

This window displays information about cashdesk users, also indicating their types, and on the right corner again detailed information about them is listed which super user can edit.

Food Management Window:

This window is one of the most functional ones which contains information about meal categories, meal ingredients, available ingredients, drinks and their prices as the name indicates. Here user can play with the ingredient types and amounts and add remove ingredients. Same applies for drinks as well.

Customer Management Window:

Registered customers will be reached through this window. Using the search option cashdesk user can look for customers by selecting search category. Since super user is in the centre of cashdesk module s/he may ask for the details of the selected customer, even add/delete customers in this window.

Statistics and Reports Window:

Another crucial objective of sofr@m project is to report statistics since it also aims for restaurant satisfaction. Therefore this window will display information about frequency of meal usage.

Online Reservations Window:

Online reservations will be displayed in this window. In addition, the super user is allowed to delete a reservation

Exit Program:

Exits the program.

Normal User Module:**View Reservations Window:**

In this window the normal user is allowed to see the registered tables and reservations which s/he cannot edit.

End-Of-Day:

Normal users takes the end of day bill and sends it to the printer using this window.

Exit Program:

Exits program.

3.2 Web Application Module**Login Window:**

It is an ordinary login window and no need to explain it.

User Info:

In this window, user creates an account or changes his info. Some checkings are done in here such as not entering a number to name text field. If some violations done program should warn user.

Top Menu:

In this window, there are butttons to applications of web module.If one of them does not direct you to a menu. There is a problem and should be reported.

Shown Meals:

In this window, there should be categories of meals that exist in restaurants' menu. If a category selected and clicked on button. In the next listbox there should be the meals of that category. And also there is a drinks listbox there and the same operations can be done with it.

With these, user can add these meals or drinks to basket.

Show Basket:

In this window, the selected foods and drinks should be shown in listbox. And the user can change the amount of selected item or drop from list.

Submit Basket:

In this window, the user should enter the arrival time of order and can select the payment options.

Online Reservation:

In this window, the user can select a day and reserve a table, cancel a reservation or order meal of reservation day.