Software Development 2017

Software Requirements Specification *Example*

for

<School Canteen Ordering System>

****[**https://www.1001freedownloads.com/free-cliparts/tag/eating**](https://www.1001freedownloads.com/free-cliparts/tag/eating)

***Assessment Criteria 3: Interpretation of data to identify and document the software requirements specification (10 marks)***

## Draws a complete set of conclusions that are connected to, and consistent with, the data represented in the analytical tools.

## Describes specifically and accurately all the functional and non-functional solution requirements. All constraints and scope are logically connected to the solution requirements

## Using study-specific language, describes precisely and accurately all relevant aspects of the technical environment and intended audience of the solution.

## Assembles all the documentation clearly, accurately and logically. It is fit for purpose.

**SAT 3O2: Document Overview**

**Criterion1: Project Plan**

* Present a detailed Gantt Chart for the duration of the development of the project.

**Criterion 2: Analysis**

* Data Collection
* Folio of Solutions: Design and present 2 – 3 Possible Solutions:
* Data Flow Diagram
* Context Diagram
* Use Case

**Criterion 3: SRS**

* Product Perspective and Audience
* User Characteristics
* Operating Environment
* Scope
* Functional and Non-Functional Requirements
* Constraints

APPENDIX: Discuss Preferred Design

* Data Flow Diagram
* Context Diagram
* Use Case

**Criterion 4. Design**

* Evaluations Criterion and how it will be measured
* Annotated Mock Up of Interfaces
* Descriptions of how each feature meets each FR and NFR
* Data Dictionaries
* Object Descriptions
* Pseudocode

**Criterion 1: Gantt Chart**



**Dates:**

|  |  |
| --- | --- |
| Unit 3 Criterion 1: 12 May 2017Unit 3 Criterion 2: 19 May 2017Unit 3 Criterion 3: 26 May 2017Unit 3 Criterion 4: 4 June 2017 | Unit 4 Criterion 5, 6 and 7: 25 August 2017Unit 4 Criterion 8: 1 September 2017 |

**Criterion 2: Analysis**

## Data Collection

*Describe the data collection methods utilized during analysis*

*Justify the appropriateness of the collection methods with reference to its ability to determine needs and requirements*

*Data collection methods should be descriptive and not be singular words e.g. questionnaire.*

*Add additional lines as required*

Data Collection Tools

|  |  |
| --- | --- |
| Collection Method | Justification |
| CM1: Interview | To investigate the full requirements and scope needed by the Canteen Manager. Open questions in the interview will allow for unanticipated responses to understand the full scope of what the solution is needed to do. Interviews allow for some pre-prepared questions to clarify functionality issues as well as spontaneous questions as new aspects arise. |
| CM2: Focus Group | To gain insight into the needs and issues relating to the solution and app usage at school, a focus group will allow for free discussion based on a few key points to explore a range of issues related to app usage. There is an opportunity to identify key gripes of users so as to avoid them in the development of this canteen solution. |
| CM3: Survey | The survey will provide evidence of which mobile app platforms are mostly used, and if the app will be used at all. We could discover if students are likely to order earlier in the day which could lead to a possible earlier deadline for reports. |

All Data are listed in the Appendix A1

*A copy of all data collection tool(s) and record of data collected should be included as part of the appendix*

**Folio of Solutions**

* **Context Diagram**
* **Data Flow Diagram**
* **Use Case Diagram**

All Diagrams are listed in the Appendix A2

**Criterion 3: Software Requirements Specification**

## Purpose & Users Characteristics

Provide a short description of the software being specified, its purpose and audience

|  |
| --- |
| Problem DescriptionThe Canteen Manager, Mr. Phillips needs a solution to a growing problem in the management of his canteen. He requires a software solution that allows students to order their lunch before 11am so that Mr. Phillips can know what to cook for lunch time.The PurposeThe purpose of this software solution is to read in student orders, organize and calculate the orders to identify how many product items are required for preparation and to produce a report that lists the totals of each product item so that the Manager can easily organize the preparation of the right amount of products. There may be an opportunity to broaden the scope to include the product ingredients and a stock take that re-orders when stock is low.Users Characteristics* *Age*
* *Gender*
* *Educational background*
* *Language and culture*
* *Computing skills*
* *Physical abilities and disabilities*
* *Domain-related knowledge and skills (e.g., accounting knowledge for an accounting application)*
* *Job experience and competence*
* *Place in the organizational hierarchy*
* *Attitudes, motivation, and morale*
* *Persistence, patience, confidence, problem-solving ability, curiosity, ability to deal with change, etc.*
* *Frustrations and problems relating to the user’s tasks or activities*
* *General sources of stress or anxiety (e.g., deadlines, performance targets, workplace competition)*

The Audience includes the Manager of the Canteen Mr. Phillips, the canteen staff and the staff and students of the school who are the customers of the canteen.Mr. Phillips is a moderately proficient in the use of computer apps but is not able to develop, design or maintain the code to produce one. He needs a simple interface to assist him in accessing the output report when he is preparing products for lunch. He will be required to update menu items in the future. He is the primary user of the application and will access it daily. Key characteristics that may impact on the design and functionality of the solution include: * Computer Skills (moderate),
* His role as Manager of the Canteen (responsible for the up-keep of the solution)
* His ability to manage change in the workplace

The canteen staff who are considerably older and less familiar with using apps computers. Key Characteristics that may impact on the design of the solution include:* Age; older blue-collar workers are less familiar with working with technology
* Attitudes towards new changes
* Stress in the workplace leading to deadlines – how will they cope if there is a problem with the report output, for example.

Students are young and adaptable to change. Many are very accomplished with technology application use but can easily tire of apps that are frustrating or time consuming to use.Key Characteristics that may impact on the design of the solution include:* Age (Very young students may not be able to read any text instructions or contents)
* Patience with new systems and design
* Motivation to order food early in the day

Staff are highly educated and very busy. Many are familiar with technology application use but can easily tire of apps that are frustrating or time consuming to use.Key Characteristics that may impact on the design of the solution include:* Highly educated
* Patience with new systems and design
* Motivation to order food due to busy schedules
 |

Provide a description of the expected end users of the solution. Identify the various user classes that you anticipate will use this product. User classes may be differentiated based on frequency of use, subset of product functions used, technical expertise, security or privilege levels, educational level, or experience. Describe the pertinent characteristics of each user class. Certain requirements may pertain only to certain user classes.

|  |
| --- |
| The Main End User will be the professional chef, Mr. Phillips who will need to be trained in the use and maintenance of the solution. He will not be astute in programming updates, therefore they will require simple instructions in maintenance. This users will be frequent users of the system on a daily basis.Occasional End Users, Canteen staff may access the system to produce a report, or simply use the final report already produced in the kitchen. These users will have a limited access to the system.Students and Staff will be Low End Users who are the customers of the canteen. The only enter data and receive an order number.Scope |

## Items within Scope

*List the software’s capabilities*

|  |
| --- |
| The Canteen Ordering System will:* Enter student and staff numbers and check for passwords
* Enter student and staff order details (product and quantity)
* Produce a total cost for the order and an order number with the details as proof of order
* Add the order details to a tally for each product
* Cease to operate at 11.00am
* Produce a printable report that lists the total number of each product ordered
* The interface for the ordering App form will be compatible for all mobile devices including mobile phones and tablets.
* Limited to iOS and Android OS mobile devices.
 |

## Operating Environment

Describe the environment in which the software will operate, including the hardware platform, operating system and versions, and any other software components or applications with which it must exist.

A diagram of the network could be included in the appendix

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The Canteen Ordering System will operate in two environments: Kitchen Manager’s office and the consumer’s mobile devices.Kitchen Manager’s Office

|  |  |  |  |
| --- | --- | --- | --- |
| Hardware | Office PC* Hard Drive (300GB)
* Processor (3.4 GHz)
* RAM (8GB)
 | School Server* Hard Drive (300GB)
* Processor (3.4 GHz)
* RAM (8GB)
 | Printer |
| Operating System | Win 10 | Win 10 |  |
| Software Applications  | Acrobat WordExcel | NOS | Printer Drivers |
|  |  |  |  |

Customer’s Mobile Devices

|  |  |  |
| --- | --- | --- |
| Hardware | iPadiPhone | Android TableAndroid Phone |
| Operating System | iOS | Android |
| Software Applications  | The Canteen App Apple App Store | NOSGoogle Play |
|  |  |  |

 |

# Functional Requirements

*Itemize the detailed functional requirements. Include how the product should respond to anticipated error conditions or invalid inputs. Requirements should be concise, complete, unambiguous, verifiable, and necessary. Each requirement should be uniquely identified with a sequence number.*

*Add additional rows until all functional requirements are listed.*

|  |  |  |
| --- | --- | --- |
| No | Requirement | Notes |
| FR01 | Interface of the Customer’s App allows a choice selection from all products available. | This may need to be organized into categories so as to limit the number of selections on the screen.  |
| FR02 | The Customer’s App allows for quantities to be entered of order products. |  |
| FR03 | Customers will be provided with a statement of their order details along with an order number | This could be emailed or texted. |
| FR04 | The app must store the order details in a file (ORDERS) |  |
| FR05 | The app needs to search the file (PRODUCTS) and add the order quantity to the TotalNumber of the ordered products | A multi-dimensional array |
| FR06 | The App must provide access to the ORDERS file from the management interface. |  |
| FR07 | The app will sort the ORDERS file by name |  |
| FR08 | The App must provide access to the PRODUCTS file from the management interface. |  |
| FR09 | The app must be able to print the ORDERS and the PRODUCTS files. |  |
| FR10 | The App must cease to take orders at 11am |  |
| FR11 | App must inform customers that the orders have ceased at 11am | Interface change  |
| FR12 | Validation to ensure empty orders are not placed through customer interface. |  |

# Non-Functional Requirements

*Itemize the non-functional requirements such as user-friendliness, response rates, robustness, portability, reliability and maintainability. Write these to be specific, quantitative, and verifiable when possible. Each requirement should be uniquely identified with a sequence number.*

*Add additional rows until all non functional requirements are listed.*

|  |  |  |
| --- | --- | --- |
| No | Requirement | Notes |
| NFR01 | Customer interface needs to attractively designed | School colours (Blue, Green, Gold) |
| NFR02 | Customer interface needs to be robust – with validation in place to deal with unexpected and inaccurate input. |  |
| NFR03 | The customer interface needs to present responses to input as the orders are made. | As order is made an icon can add to the number of items in the cart. |
| NFR04 | The customer interface needs to be easy to read and adaptable for portable devices. Optimized for touch screens. |  |
| NFR05 | Management interface to have details regarding updating product list  |  |
| NFR06 | Clear buttons and other objects use designs that are easily recognisable in their use.  |  |
| NFR07 | ORDERS and PRODUCTS files need to be easy to maintain and access. | Desktop icons or links from interface |
| NFR08 | The report should be printable directly after 11am. |  |

# Constraints

*Describe any items or issues that will limit the options available to the developers.*

|  |
| --- |
| Economic & Time ConstraintsThis solution is a prototype and will not be costed as a commercial product. However there is a schedule for completion in 8 weeks with the deadline: Friday September 1st. Technical ConstraintsInput is limited to mobile network coverage and the network servers at the school. The capacity of the dries will limit how much data can be stored.Social ConstraintsWillingness to use new technology and inclusion for impairment need to be considered.Legal ConstraintsPrivacy and Copyright laws need to be observed while the development takes place. |

# Appendix

***Assessment Criteria 2: Skills in using analytical tools to depict relationships between data, users and digital systems***

 ***(10 marks)***

Identifies a complete and relevant set of data for analysis and uses a wide range of appropriate collection methods and techniques.

Uses accurately all features of the selected analytical tools.

Depicts accurately all of the relationships between the data, users and digital systems in all analytical tools.

Applies all techniques correctly and consistently in all analytical tools.

## A1: Data Collection

*Describe the data collection methods utilized during analysis*

*Justify the appropriateness of the collection methods with reference to its ability to determine needs and requirements*

*Data collection methods should be descriptive and not be singular words e.g. questionnaire.*

*Add additional lines as required.*

|  |  |
| --- | --- |
| Collection Method | Justification |
| CM1: Interview | To investigate the full requirements and scope needed by the Canteen Manager |
| CM2: Focus Group | To gain insight into the needs and issues relating to the solution and app usage at school |
| CM3: Survey | To identify specific Functional and Non-Functional requirements  |

*A copy of all data collection tool(s) and record of data collected should be included as part of the appendix*

CM1: Canteen Manager Interview

Q1. What do you want this software to do?

*The Canteen Manager, Mr. Phillips needs a solution to a growing problem in the management of his canteen. He requires a software solution that allows students to order their lunch before 11am so that Mr. Phillips can know what to cook for lunch time.*

Q2. Do you need it to provide proof of ordering at POS?

*Actually, Yes! That would be a good idea – just in case we have a situation where we run out of products and a student claims they ordered on.*

Q3. Will other staff in the canteen need to access the system?

*Occasionally I might need another staff member to print out the report or look up an order.*

Q4. How many sales are you currently making – so we know what to expect in way of number of orders

*Hard to say – about 200 meals a day, maybe more with a new system.*

*A copy of all data collection tool(s) and record of data collected should be included as part of the appendix*

CM2: Focus Group Discussion Points (Students and Staff)

Point One: Would you use an app to order your lunch before 11am

*\* Yes 35%*

*\* No 10%*

*\* Difficult to order when there is training in the mornings*

*\* Can’t use phone at school after 8.30am*

Point: Two: What would stop you from using the app?

 *\* Mistakes in orders*

*\* Hard to use*

*\* Slow to use*

Point Three: What do hate about apps you have used in the past.

 *\* Expensive*

 *\* Buggy*

 *\* Go round in circles when you can’t enter data*

**CM3: SURVEY (students)**

What do you use regularly each morning?

* iPhone 46%
* iPad 1%
* Android Phone 40%
* Other Tablets 1%
* Other Phones 2%

Would you use an app to order your lunch? YES (77%) NO (21%) Don’t Know (2%)

When in the morning would you order your lunch?

* 6am – 7am 12%
* 7am – 8am 61%
* 8am – 9am 23%
* 9am – 10am 4%
* 10am – 11am 0%

## A2: Folio of Solutions

## Context Diagram

*A copy of the context diagram should be included as part of the appendix*

Students & Staff

Manager

Mr. Phillips

Order Report

List of Orders

Order details

Canteen Staff

Order Report

## Data Flow Diagram

*A copy of the data flow diagram should be included as part of the appendix*

Order Number

Students/Staff

Order Record

With Order Number

Order details

Order Record

STORE: Orders

 Products

Order Number

Product order quantities

Student Order Request

Manager

Complete Report

Report Request

## Use Case Diagram

*Itemize each Use Case*

*Add additional rows until all use cases are listed*

**CANTEEN ORDERING SYSTEM**



MANAGER

<<extends>>



 CUSTOMER

<<includes>>

|  |  |  |
| --- | --- | --- |
| No | Use Case | Notes |
| UC01 | Print Report | This report lists all the products and how many of each are required to be prepared. |
| UC02 | Order Number Search | Returns a list of orders that is searchable to match order numbers at POS.<<extends>> If there is an issue the Manager can call up a particular order along with the Student details. |
| UC03 | Order Submit | POS where customers order their lunch. <<includes>> options of different products under different categories to allow for choice. |

## Evaluation Criteria Example

|  |  |  |  |
| --- | --- | --- | --- |
| No | Requirement | Strategies | Effectiveness & Efficiency |
| EC01 | (FR01) Interface of the Customer’s App allows a choice selection from all products available.Does the interface allow the full selection of available products?  | Client to provide all choice selections are available in documentation data. Client to check if all selections have been made available in the interface. During Desk Checking and Final System Checking all sections are included, correct and available for ordering. | Effectiveness:* Are the selections easy to access?
* Easy to read?

Efficiency: * Is there a real-time feedback to show the user has made a selection?
 |
| EC02 | (FR02) The Customer’s App allows for quantities to be entered of order products.Does the App allow customers to enter a quantity for each product choice? | Client to check if quantity is available for input in the interface. During Desk Checking and Final System Checking Quantity is able to be and is correctly calculated. | Effectiveness:* Easy to find enter object?
* Reads in quantity correctly?

Efficiency: * Is the method of data entry quick and easy to use (pull down menu rather than typing in)?
 |

## MODEL : Design Folio

Design A: A simple, but an unappealing screen design, which may not be easy to maintain. With Check boxes, Mr. Philips will not be able to easily update the products. This is a functionality issue limited by the skill level on the Manger Mr. Phillips.

Back Buttons not clear this is a accessibility and readability issue that needs to be fixed.

There needs to be a Cancel button to allow for incomplete orders to be re-set. Possibly a Cart form.

Again the price setting in the code is not ideal for maintainability. For the Main user, the product prices need to be updated from time to time which need to be in an easy to use format such as a text file.

## Design A:

SKC Canteen

Select Type

Hot Meals

Hot Pastry

Sandwiches

Sushi

Order my Lunch!

Confirm

Hot Pastry

1 x Beef Pie

Beef Pies

Cottage Pies

Sausage Rolls

Sushi

Amount

Continue

**Design A: Pseudocode**

|  |  |  |
| --- | --- | --- |
| STARTRead in “Order my Lunch”Open “Type of Food” FormRead in “Type”If Type = Hot Food Then Open “Hot Food” formElseIF Type = Hot Pastry Then Open “Hot Pastry” formElseIF Type = Sandwiches Then Open “Sandwiches” formElseIF Type = Sushi Then Open “Sushi” formEND | STARTForm “Hot Food”Read in CheckboxesCASE:  Pasta Price ← $5 Rice Price ← $4 Curry Price ← $4.50Read in AmountTotal ← Price \* AmountDisplay: Total, Hot Food TypeEND | STARTForm “Sandwiches”Read in Checkboxes)CASE:  Chicken ← $5 Ham ← $4 Cheese ← $4.50Read in AmountTotal ← Price \* AmountDisplay: Total, Sandwich TypeEND |

## Design A

Object Description

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Object Type | Object Name | Type | Variable Handled | Description |
| Form | frmHome | Event | N/A | This is the home screen that starts the app. |
| Form | frmTypes | Event | N/A | This is the screen provides the meal type options |
| Form | frmHMeals | Event | N/A | This is the screen that offers the Hot Meal options |
| Form | frmHPastry | Event | N/A | This is the screen that offers the Hot Pastry options |
| Form | frmSandwiches | Event | N/A | This is the screen that offers the Sandwiches options |
| Form | frmSushi | Event | N/A | This is the screen that offers the Sushi options |
| Button | btnStart | Event | N/A | Opens frmTypes |
| CheckBox | chbHMeal | Event | Boolean | Selects Hot Meals |
| CheckBox | chbHPastry | Event | Boolean | Selects Hot Pastry |
| CheckBox | chbSandwich | Event | Boolean | Selects Sandwiches |
| CheckBox | chbSushi | Event | Boolean | Selects Sushi |
| Textbox | txtAmount | Method | intAmount | Reads in the Amount of the products |
|  |  |  |  |  |

Data Dictionary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable name | Type | Size | Scope | Description |
| intAmount | Integer | 1 | Global | Handles the amount of a product ordered. |
| dblPrice | Double | 4 | Global | Handles the individual price of a product chosen |
| dblTotalCost | Double | 4 | Global | Total Price of the order |
|  |  |  |  |  |

## Design B:

Beef Pie

 1

2

3

 4

Select

Hot Pastry

 Beef Pies

Cottage Pies

 Sausage

 Rolls

Select

Select Type

 Hot Meals

Hot Pastry

Sandwiches

 Sushi

Select

**Useability:** This design on a mobile device may be more suitable as the scrolls are easier to use with a touch screen.

**Maintainability**: A text file containing products and their prices is easier to maintain.

**Readability:** fewer items displayed on the screen makes the text easier to read.

**Effective feedback:** Providing an icon that displays the items in the order makes it clear what has been registered in the user’s order.

Anything Else?

Your Order

Add to Order

1 x Beef Pie



Add another Item

FINISHED

|  |  |  |
| --- | --- | --- |
| STARTRead in “Order my Lunch”Open “Type of Food” FormRead in “Type”CASE: 0: Open Hot Food Form1: Open Hot Pastries Form2: Open Sandwiches Form3: Open Sushi FormEND | STARTForm “Hot Food”Read in from HotFood()CASE:  Price ← HotFood(Pasta Price ← HotFood(Rice) Price ← HotFood(Curry)END | STARTForm “Quantity”Read in Check boxes:Case: 0: Quantity ← 1 1: Quantity ← 2 2: Quantity ← 3 3: Quantity ← 4Total ← Price \* QuantityEND |

## Design B

Object Description

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Object Type | Object Name | Type | Variable Handled | Description |
| Form | frmHome | Event | N/A | This is the home screen that starts the app. |
| Form | frmHMeals | Event | N/A | This is the screen that offers the Hot Meal options |
| Form | frmHPastry | Event | N/A | This is the screen that offers the Hot Pastry options |
| Form | frmSandwiches | Event | N/A | This is the screen that offers the Sandwiches options |
| Form | frmSushi | Event | N/A | This is the screen that offers the Sushi options |
| Button | btnSelectType | Event | N/A | Confirms the Type |
| Button | btnSelectProduct | Event | N/A | Adds the selected product to the order |
| ComboBox | cbxTypes | Event | N/A | Opens the right form |
| ComboBox | cbxHMeals | Event | strFoodType |  |
| ComboBox | cbxHPastry | Event | strFoodType |  |
|  |  |  |  |  |
|  |  |  |  |  |

Data Dictionary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable name | Type | Size | Scope | Description |
| intAmount | Integer | 1 | Global | Handles the amount of a product ordered. |
| dblPrice | Double | 4 | Global | Handles the individual price of a product chosen |
| dblTotalCost | Double | 4 | Global | Total Price of the order |
|  |  |  |  |  |