COMP1004

Computing Practice

2020/2021

Project Title

Doki-Doki Delight Management System

Contents

Executive Summary....2
Functional Requirements....2
- Business Requirements....2
- Administrative Functions....3
- User Requirements....3
- System Requirements....3

Non-functional Requirements....4
- Usability....4
- Reliability and Availability....4
- Performance Requirements....5
- Security Requirements....5
- Social and Ethical Requirements....5
- Legal Requirements....5
- Interoperable Requirements....5

Requirements Overview....6
User Stories....9
- Customer Profile....9
- Staff Profile....12
- Product Backlog....16

Sources....17

Planner:
https://tasks.office.com/live.plymouth.ac.uk/Home/PlanViews/KB8DrzSpokCUWjx6hWH765YACcBq?Type=PlanLink&Channel=Link&CreatedTime=637402140671510000

Executive Summary

The contents of this document will be used to summarise the requirements of the *Doki-Doki Delight Management System.* The purpose of expressing the requirements in this document is so that there exists a singular location upon which can be referenced by myself (and any who wish to see the requirements analysis process) throughout the continuation of the project lifecycle.

It is intended that this document becomes an adaptive and changing record – the requirements may be amended throughout the project. The types of possible amendments include: adding extra requirements (of which may arise due to changing needs of the client, *Doki-Doki Delight*), or removal of requirements that are no longer deemed suitable or 'fit-for-purpose'.

Finally, the requirements found within this requirement analysis phase will be used as the foundation of the product backlog, which can be thought of as an extension of this requirements document.

Functional Requirements

This category of requirements details the interaction between functionality and conditions – how the system will behave upon meeting specific conditions/criteria/inputs. Simply put, the functional requirements identify *what the system should do.*

Functional requirements can be split into the four following categories:

i. Business requirements
ii. Administrative functions
iii. User requirements
iv. System requirements

The following sub-sections of this document will evaluate the relevancy of each of these functional requirements within the context of the Doki-Doki Delight Management System. It is important to note that within SCRUM, requirements are a developing concept – these requirements are expected to evolve throughout the course of project's lifecycle.

Business Requirements

These requirements can be loosely defined as something that enables a business to carry out their mission/goal/objective – whether this is providing a service or a product. Therefore, these enabling features might range from a process, the data required for that process or a procedure that enacts how the process will be carried out. Business requirements are generally objective oriented.

- We need a single page webpage that can be accessed by both customers and staff
- We need the webpage to have authorisation for staff
- We need the manager to be able to have admin permissions
- We need to be able to let customers create their own reservations
- We need to be able to securely store customer contact information
- We need this information to be stored in a concise and consistent format
- We need to contact customers with their reservation details
- We need to authenticate staff when they log-in to the website

- We do not want to be overbooked on reservations
- We do not want social bubbles of over 6 individuals within our venue

Administrative Functions

These requirements can be summarised as the systemic functions that will help operate the business – such as the generation of reports or charts/graphs. These functions can aid and assist executive individuals within a business with information gathering and decision making. Overall, they may provide an abstract view on how the business is operating. Administrative functions are generally statistics oriented.

- The system should produce a high-level monthly/weekly overview
    - Total number of reservations made
    - Total number of customers
    - Total number of confirmed COVID cases

User Requirements

These requirements specify what the user of the system will be able to do. More specifically, the users of Doki-Doki Delight's Management System can be split into two groups – customers and staff. These two groups of stakeholders will interact with the system differently and therefore their needs, or requirements, will vary. Please note that this section differs from *Usability Requirements*.

- The customers need to be able to book a reservation
- The customers need to be able to see a café menu
- The customers need to be able to view their reservation
- The customers need to be able to cancel a reservation
- The customers need to be able to edit some of the reservation's details

- The staff need to be able to sign-in to the system
- The staff need to be able to delete reservations
- The staff need to be able to add reservations
- The staff need to be able to generate a report
- The staff need to be able to amend a reservation's details
- The staff need to be able to view all current reservations
- The staff need to be able to edit venue details
- The staff need to be able to see all shifts

System Requirements

These requirements are the technical aspects of the system wherein hardware and software specifications and system actions are defined. Defining the system requirements means that later on within the lifecycle the proposed solution can be tailored to these predefined requirements.

- Must be a single page webpage application
- Must use HTML5/CSS/JavaScript along with ASP.NET Core and a JavaScript SDK
- Must be a dynamic webpage
- Must be compatible with desktop
- Must be compatible with smartphones
- Backup of data

Non-functional Requirements

This category of requirements specifies the criteria in which the operation and scope of a system can be scrutinised and judged. As such these requirements are often used to measure the performance and usability of a system. Simply put, the non-functional requirements may express the constraints of a system and any external requirements, that are not defined under functional requirements.

Non-functional requirements can be split into the following qualities and characteristics:

i.	Performance	vi.	Recoverability	xi.	Manageability
ii.	Scalability	vii.	Maintainability	xii.	Environmental
iii.	Capacity	viii.	Serviceability	xiii.	Data integrity
iv.	Availability	ix.	Security	xiv.	Usability
v.	Reliability	x.	Regulatory	xv.	Interoperability

(Performance may be measured in terms of response time, throughput, and utilization.)

The following sub-sections of this document will evaluate the relevancy of each of these non-functional requirements within the context of the Doki-Doki Delight Management System.

Usability

These requirements can be defined by their ability to enable users to achieve their specified goal and carry out their roles. These requirements should be testable and therefore help the final product to be easy to use. Usability is often an important factor in *Design.*

- The system will decrease the amount of erroneous input by 80%
- After 10 minutes of training, staff will be able to manually amend customers reservations
- After 15 minutes of training, staff will be able to amend venue details
- It should take less than 3 minutes for all customers to be able to book a reservation
- In under 10 minutes after booking a reservation the customer should receive their details via SMS
- All users should give an average satisfaction rating of 90%

Reliability and Availability

Reliability requirements are measurable statements that will be used to examine whether the system has the quality of being consistent – like wise availability requirements are concerned with the general accessibility to the system. These requirements are grouped as they are concerned with the consistency of the system – simply put, the unchangingness and smooth operation of the system.

- The system should function at all times – 24/7
- The system should be able to support at least 10 people accessing it at the same time
- If updates are to be applied this will occur during business downtime – at night
- All hyperlinks must be fully functional

Performance Requirements

These requirements are measurable technical aspects – they will be used to set the criteria that the system should perform under. The system will generally be optimised to meet these requirements.

- Upon opening the website, it should take less than 2 seconds to fully load
- Upon booking a reservation, the customer should receive SMS confirmation within 10 minutes
- Each request should process within under 7 seconds

Security Requirements

These requirements will determine the features that will prevent, or minimise the possibility, of both cyber and physical threats to the system.

- The system will time-out after 10 minutes of inactivity
- The system will have secure password authorisation for staff
- Customers cannot sign-in
- The system will encrypt personal information
- The system will be backed-up in case of emergency (needing to revert etc)

Social and Ethical Requirements

These types of requirements uphold some societal values and are therefore important in the viewpoint of a public eye. By meeting these requirements, the product should support Doki-Doki Delight as a customer-oriented business.

- The website should be inclusive and provide features to provide greater customer satisfaction
- The website should provide users with information on how their information is used
- User data should be encrypted and stored securely

Legal Requirements

These requirements are concerned with regulatory rules that govern all manners of procedures. These regulations are often in place to incentivize criminal behaviour, and most relevantly, to protect individuals from harm or danger.

- Record all staff working at the venue their shift times on a given day and their contact details
- Keep records of customers and staff for 21 days
- Identify company policies
- The system must adhere to the Companies Act 2006 – identify business
- The system must adhere to the GDPR – explain to users how personal data is used
- The system must adhere to the Equality Act 2010 – ensure inclusivity

Interoperable Requirements

Interoperability is the quality that determines whether and which interfaces may communicate. In simpler terms it can be understood as a system being able to work with other external systems

- As of 07/11/20 I cannot think of any interoperability requirements – potentially unnecessary.

Requirements Overview

Within this section of the document I will compile all of the aforementioned requirements and divide them into four tiers of priority – must have, should have, could have, and won't have.

Must have requirements are high priority features that must definitely be included within the web-application product to make it a success. They are absolutely required as they will provide the foundation to a successful product. If any of these requirements cannot be fulfilled the final product will not truly adhere to Doki-Doki Delight's expectations.

Should have requirements are medium priority. They are slightly less important to the project than *must have* requirements and will perhaps not need to be implemented in some situations. The product will remain viable without them.

Could have requirements are the low priority features that will add flavour to the product but not necessarily improve it's rate of success – they are the least important because without them the system should still be expected to provide a solution for chasing Doki-Doki Delight's vision. In the instances that extra time and extra budget are available, these requirements may be integrated.

Won't have requirements are generally the features that have been identified as possibly existing but have been ultimately decided to be discarded due to having no actual impact on the product. These requirements may even go out of the scope of the project's needs – and therefore cause harm to the product's lifecycle if developers decide to implement them.

Further on throughout this document the reader can find two representations of the MoSCoW requirements – these contain the same content, but the tables structured differently. By listing the requirements and prioritising them it is intended that the process of decomposing the requirements into tasks will be achieved with greater ease and accuracy

MUST HAVE

- Single page webpage application
- HTML5/CSS/JavaScript along with ASP.NET Core and a JavaScript SDK
- Staff authorisation
- Customer reservation booking
- Don’t accept reservations with a social bubble of over 6 individuals
- Overbooking prevention
- Staff can amend venue details
- Desktop compatibility
- Functions at all times – 24/7
- Can support at least 10 people accessing it at the same time
- All hyperlinks must be fully functional
- User data should be encrypted and stored securely
- Customers cannot sign-in
- Record all staff working at the venue their shift times on a given day and their contact details
- Keep records of customers and staff for 21 days
- Identify company policies
- The system must adhere to the Companies Act 2006
- The system must adhere to the GDPR
- The system must adhere to the Equality Act 2010

SHOULD HAVE

- The customers need to be able to view their reservation
- The customers need to be able to cancel a reservation
- The customers need to be able to edit some of the reservation’s details
- The staff need to be able to delete reservations
- The staff need to be able to add reservations
- The staff need to be able to view all current reservations
- The staff need to be able to edit venue details
- The staff need to be able to amend a reservation’s details
- Must be a dynamic webpage
- Each request should process within under 7 seconds
- The website should provide users with information on how their information is used
- The website should be inclusive and provide features to provide greater customer satisfaction

COULD HAVE

- The system should produce a high-level monthly/weekly overview report
- The staff need to be able to see all shifts
- The customers need to be able to see a café menu
- Compatible with smartphone browsers
- If updates are to be applied this will occur during business downtime – at night
- Customer should receive SMS reservation confirmation within 10 minutes
- We need to contact customers with their reservation details
- The system will time-out after 10 minutes of inactivity

WON’T HAVE

- Automated backups
- Support for peripheral devices other than mouse or keyboard

(First representation)

REQUIREMENTS	MUST	SHOULD	COULD	WONT
Single page webpage application				
HTML5/CSS/JavaScript along with ASP.NET Core and a JavaScript SDK				
Staff authorisation				
Customer reservation booking				
Don't accept reservations with a social bubble of over 6 individuals				
Overbooking prevention				
Staff can amend venue details				
Desktop compatibility				
Functions at all times – 24/7				
Can support at least 10 people accessing it at the same time				
All hyperlinks must be fully functional				
User data should be encrypted and stored securely				
Customers cannot sign-in				
Record all staff working at the venue their shift times on a given day and their contact details				
Keep records of customers and staff for 21 days				
Identify company policies				
The system must adhere to the Companies Act 2006				
The system must adhere to the GDPR				
The system must adhere to the Equality Act 2010				
The customers need to be able to view their reservation				
The customers need to be able to cancel a reservation				
The customers need to be able to edit some of the reservation's details				
The staff need to be able to delete reservations				
The staff need to be able to add reservations				
The staff need to be able to view all current reservations				
The staff need to be able to edit venue details				
The staff need to be able to amend a reservation's details				
Must be a dynamic webpage				
Each request should process within under 7 seconds				
The website should provide users with information on how their information is used				
The website should be inclusive and provide features to provide greater customer satisfaction				
The system should produce a high-level monthly/weekly overview report				
The staff need to be able to see all shifts				
The customers need to be able to see a café menu				
Compatible with smartphone browsers				
If updates are to be applied this will occur during business downtime – at night				
Customer should receive SMS reservation confirmation within 10 minutes				
We need to contact customers with their reservation details				
The system will time-out after 10 minutes of inactivity				
Automated backup				
Support for peripheral devices other than mouse or keyboard				

(*Second representation*)

User Stories

These stories can be used to form a profile of what each user of the system aims to achieve and how the procedures they use to get there. These are an essential part of understanding similarities between different roles and the main responsibilities of the users. After further researching user stories I have understood the clarification that Behaviour Driven Development practices provide when identifying the users needs and roles. Therefore, the following user stories have also been expressed in BDD format.

Customer Profile

Doki-Doki Delight's customers range from young adults to the elderly (20 to 65). As a relatively small café, customers love the feeling of inclusivity and the highly focused customer service. The customers main role within the venue is to purchase food and drink.

CUSTOMER
I want to book a reservation so that I can eat within Doki-Doki Delight's café
I want to view my reservation details so that I can remind myself when the reservation is for
I want to see how my information is used so that I can ensure my rights are not being violated
I want to be able to be able to cancel my reservation because I have changed my mind
I want to be able to amend my reservation because my schedule has changed
I want to be able to view the café menu so that I can share it with my friends

Title: customer books a reservation

As a customer
I want to book a reservation
so that I can eat within Doki-Doki Delight's café

Scenario 1: Venue has available seating/ dine-in space for the selected timeslot
Given the venue has less than max capacity
And the reservation is for 6 or less individuals
And the customer has input their full name and telephone number
And the specific timeslot isn't already booked
When the customer clicks 'confirm reservation'
Then the website should return the reservation details

Scenario 2: Venue has no available seating/dine-in space at the selected timeslot
Given the timeslot is already reserved by another customer
When the customer clicks the date
Then the website should return 'this timeslot is already taken, please choose another'

Scenario 3: Customer does not input name or telephone number
Given the name or telephone number fields are empty
When the customer clicks 'confirm reservation'
Then the website should signal to fill in the empty input fields.

Title: customer views reservation details

As a customer
I want to view my reservation details
so that I can remind myself when the reservation is set

Scenario: customer successfully books a reservation
Given the customer clicks 'confirm reservation'
And the webpage processes the details
When the webpage has finished processing
Then the webpage should return reservation details
And send an SMS text message to the contact information supplied

Title: customer views café menu

As a customer
I want to be able to view the café menu
so that I can share it with my friends

Scenario: customer wants to view the café menu
Given the customer is on the webpage
When the customer clicks 'show menu'
Then scroll the webpage automatically to the menu section

Title: customer amends reservation

As a customer
I want to be able to amend my reservation
So that I can notify the venue of changes in my plans

Scenario 1: customer increases number of reservation attendees
Given the customer is on the reservation section of the webpage
    And has found their reservation
When the customer increases reservation attendees
Then output the message 'reservation sizes cannot be increased, please remake the reservation'

Scenario 2: customer decreases number of reservations attendees
Given the customer is on the reservation section of the webpage
    And has found their reservation
When the customer decreases reservation attendees
Then decrease the reservation size to new amount
    And adjust total available space left

Scenario 3: customer changes time of reservation
Given the customer is on the reservation section of the webpage
    And has found their reservation
    And there is a 6-hour time difference between now and the reservation
When the customer selects an available reservation time
Then notify the customer via SMS
    And make the previous reservation time available again
    And update the management system

Title: customer cancels reservation

As a customer
I want to be able to be able to cancel my reservation
because I have changed my mind

Scenario 1: customer calls front-desk staff
Given the customer has their reservation ID
    And full name
When the customer asks the staff to cancel their reservation
Then remove the specific reservation from the system
    And send a notification SMS text message to the contact information

Scenario 2: customer is on website
Given the customer has clicked on 'I already have a reservation'
When the customer inputs their full name

Staff Profile

Doki-Doki Delight's staff have always used a paper-based management system and it was very complicated and often resulted in erroneous or incorrect or inaccurate information being stored – such as contact information. The staff's main role is to provide café services to the customers and ensure that during the pandemic the café does not overextend past the government guidelines.

STAFF
As a front-door staff member I want to be able to view customer contact information so that I can contact them if any urgent news needs to be conveyed.
As a manager I want to be able to limit entry to the venue to only social bubbles of 6 or less so that I do not break the law
As a manager I want to be able to only accept a certain total amount of individuals into the café so that I do not break the law
As a manager I want to have a record of all staff and customer information so that I can contact them if a COVID outbreak is confirmed
As a front-door staff member I want to be able to add reservations to the system if a customer contacts the café over telephone so that I can provide exemplary customer service
As a front-door staff member I want to be able to cancel/delete customer reservations on the system if a customer contacts me so that I can provide exemplary customer service
As a staff member I want to be able to access the system on a desktop so that I can use mouse and keyboard to input data
As a staff member I want to use keyboard and mouse so that I can be more efficient when typing/inputting data
As a staff member I need to sign into the system so that I have permissions to look at business info and potentially amend it
As a staff member I need the system to automatically sign me out if I am inactive for more 10 minutes so that unauthorised access may be prevented

Title: staff contacts customer

As a front-door staff member
I want to be able to view contact information
so that I can contact them if any urgent news needs to be conveyed.

Scenario: staff needs to contact a specific customer
Given the staff know the timeslot reservation they need to contact
When the staff is on the reservation overview section
    And has found the specific reservation timeslot
Then the staff can find the corresponding contact details
    And call them using telephone

Title: webpage automatically disallows social bubbles of more than 6

As a manager
I want to be able to limit entry to the venue to only social bubbles of 6 or less
so that I do not break the law

Scenario 1: customer books a reservation with less than 6 attendees
Given that the attendees are 6 or less
When the customer clicks 'confirm reservation'
Then create a reservation

Scenario 2: customer books a reservation with more than 6 attendees
Given that the attendees are over 6
When the customer clicks 'confirm reservation'
Then return an error message saying 'social bubbles over 6 are not allowed'

Title: manager limits total acceptable customers

As a manager
I want to be able to only accept a certain total amount of individuals into the café
so that I do not break the law

Scenario 1: manager only wants x number of customers within their venue
Given that the manager has signed in
    And is on the venue details section
When the manager inputs x number of total customers into the venue capacity field
Then update the system
    And don't accept any reservations that will extend this number

Scenario 2: customer books a reservation and capacity is overextended
Given that the customer inputs x number of attendees
    And x number is less than or equal to 6
When the x number add all of the other reservations at that timeslot is over venue capacity
Then output 'sorry this timeslot is fully booked'

Scenario 3: customer books a reservation and capacity isn't overextended
Given that the customer inputs x number of attendees
    AND x number is less than or equal to 6
When the customer selects 'book reservation'
Then compare and adjust remaining space accordingly and process reservation

Title: manager views staff contact and customer contact information

As a manager
I want to have a record of all staff and customer information
so that I can contact them if a COVID outbreak is confirmed

Scenario 1: manager views staff contact information
Given that the manager is signed in
When the manager views reservation details
Then the webpage should show all staff shifts each day of the week

Scenario 2: manager views customer contact information
Given that the manager is signed in
When the manager views reservation details
Then the webpage should show all booked reservations
And their timeslots
And their customers contact information

Title: staff add reservation for customer

As a front-door staff member
I want to be able to add reservations to the system if a customer contacts the café over telephone
so that I can provide exemplary customer service

Scenario: customer calls the venue to book a reservation
Given that the venue has received a call
And the staff member is signed in
When the customer has provided their full name
And contact information
And number of attendees
Then the staff should list available reservation times/dates
And confirm whether the reservation has processed successfully

Title: staff cancel reservation for customer

As a front-door staff member
I want to be able to cancel/delete customer reservations on the system if a customer contacts me
so that I can provide exemplary customer service

Scenario: customer calls the venue asking to cancel a reservation
Given that the venue has received a call
And the staff member is signed in
When the customer has provided their full name
And reservation ID
Then the staff should find the reservation and delete it from the system

Title: staff opens website

As a staff member
I want to be able to access the system on a desktop
so that I can use mouse and keyboard to input data

Given that the staff member is on a desktop
And has a browser open
When they enter the website URL
Then the website should load in less than 2 seconds

Title: staff wants to input data/ navigate the website

As a staff member
I want to use keyboard and mouse
so that I can be more efficient when typing/inputting data

Scenario 1: staff wants to access different sections of the website
Given that the staff has a mouse
When the staff clicks on hyperlinks
Then the webpage should react accordingly and take them to different sections

Scenario 2: staff wants to input data into a text field
Given that the staff has a keyboard
When the staff types text into an input field
Then the webpage should display the characters they are typing

Title: staff wants to sign into the system

As a staff member
I need to sign into the system
so that I have permissions to look at business info and potentially amend it

Scenario: staff wants to sign in
Given that the staff member is not signed in
When they input a global username
And password
Then give them authorised access to the system

Title: staff wants to be signed out automatically if inactive

As a staff member
I need the system to automatically sign me out if I am inactive for more 10 minutes
so that unauthorised access may be prevented

Scenario: staff has been inactive for more than 10 minutes
Given that the staff member is signed in
When the webpage has not detected any activity for over 10 minutes
Then sign the staff out automatically

Product Backlog

The product backlog is a prioritised breakdown of all the tasks needed to be 'done'. This backlog has been formed by identifying the user stories, which have been identified through listing all requirements. The backlog is defined in the order of which each feature should be prioritised and developed first – these first features are usually the most important as succeeding requirements are dependent on them.

User Stories	Priority	Sprint	Status
As a staff member I want to be able to access the system on a desktop so that I can use mouse and keyboard to input data	Must		To be started
As a staff member I want to use keyboard and mouse so that I can be more efficient when typing/inputting data	Must		To be started
As a manager I want to be able to limit entry to the venue to only social bubbles of 6 or less so that I do not break the law	Must		To be started
As a manager I want to be able to only accept a certain total amount of individuals into the café so that I do not break the law	Must		To be started
As a manager I want to have a record of all staff and customer information so that I can contact them if a COVID outbreak is confirmed	Must		To be started
As a front-door staff member I want to be able to view customer contact information so that I can contact them if any urgent news needs to be conveyed.	Must		To be started
As a staff member I need to sign into the system so that I have permissions to look at business info and potentially amend it	Must		To be started
As a customer I want to book a reservation so that I can eat within Doki-Doki Delight's café	Must		To be started
As a front-door staff member I want to be able to add reservations to the system if a customer contacts the café over telephone so that I can provide exemplary customer service	Should		To be started
As a front-door staff member I want to be able to cancel/delete customer reservations on the system if a customer contacts me so that I can provide exemplary customer service	Should		To be started
As a customer I want to be able to be able to cancel my reservation because I have changed my mind	Should		To be started
As a customer I want to be able to amend my reservation because my schedule has changed	Should		To be started
As a customer I want to see how my information is used so that I can ensure my rights are not being violated	Should		To be started
As a staff member I need the system to automatically sign me out if I am inactive for more 10 minutes so that unauthorised access may be prevented	Could		To be started
As a customer I want to view my reservation details so that I can remind myself when the reservation is for	Could		To be started
As a customer I want to be able to view the café menu so that I can share it with my friends	Could		To be started
As a customer I want to be able to view the website on my smartphone's browser as it is my most readily available device.	Wont		----------

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