SENG 471: Software Requirements Engineering

Assignment 1: Formal Inspection of a Requirements Specification

Inspection of the Requirements a of Parking Garage

Team Name: /* TODO */

Team Members:

Antoine Bizon: 30025671

Ashley Brown: 30021192

***Rebecca Reid:** 30028221

Ines Rosito: 30020509

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About the Document

Brief Description:

This document is meant to describe the process used and the results of the team's analysis of the requirements document provided: "Requirements document for a parking garage control system".

This document consists of information regarding the following components:

- *Inspection Process*
  - Description of Process, Roles of Team Members, and the Inspection Meeting Structure
- *Result Summary*
  - Result summary of the Inspection
- *Discussion*
  - A discussion regarding the lessons learnt from the inspection meeting.
- *Appendix*:
  - Includes the forms used to document our results, as well as the Inspection Lessons Learnt Questionnaire.

Specific Requirements:

The specific requirements to the parking garage that the team inspected were:

- Functional req.
- Non-Functional (performance) reqs.

The requirements the team reviewed focused on the following functionalities of the parking garage:

- Ticketing system
- Reservation system
- Entry/Exit gate
- Control panel.

General Observations:

Initial impressions of the document, at a quick glance, was that minor improvements were required. The issues that were easily identified were typically of the spelling and formatting kind. Upon a more in depth analysis, larger flaws with the requirements became more apparent. Some of which required a bit of brainstorming and discussion to identify.

The objective of this assignment is to provide us with exposure to real specification and exercises to critiquing specifications. Therefore, it was expected to find a reasonable amount of issues to log. However, overall first impressions were generally positive and the team thought that the document was professional and well-written.

Inspection Process

Inspection Process Description:

Through discussion and team consensus, the inspection process used was the *walkthrough* method. Based on the roles available to us (*discussed in the next section: Roles*) it seemed the most efficient manner in which to handle the meeting, as well as the most familiar. The general process in which the inspection was conducted with the walkthrough method, was that one person would present the product step by step, with reviewers raising issues when necessary.

Roles:

The roles involved in this inspection process were:

- Inspector or Reviewer
- Reader
- Leader or Moderator
- Recorder

Each member of the team was involved with the inspection process as an inspector and/or reviewer. By being assigned such a role, each individual was required to examine the work prior to the inspection meeting, identifying any defects they believe were in the document. Once the inspection meeting began, Inspectors would participate by identifying defects, raising issues and suggesting improvements

Responsibility of the Reader, was assigned to Antoine. As a reader, Antoine was required to present portions of the work product to the inspection team in an effort to elicit participation from the inspectors. As the role of the reader pertained to presenting portions of the work, they would also notify the group when the review of one section of the document was completed and was moving onto the next.

The role of the Leader had been designated to Rebecca. As the leader, Rebecca would facilitate the review by ensuring that participants were focussed throughout the meeting and that everyone contributes. The leader is also responsible for ensuring that the entry and exit criteria are met, or at least within reason as discussed in later sections of this report.

The Recorder for the inspection meeting was Ines, as such they had the simple task of recording and classifying issues raised during the inspection meeting.

Note: Some inspection guidelines suggest the author of the document be present for the meeting. However, we did not have access to the author of the document, so any questions or duties an author would be given had to be distributed amongst the team.

Inspection Meeting Structure:

It should be noted that since the walkthrough method was used for this inspection process, the structure of the meeting reflects the structure of the product.

At the start of the Inspection Meeting, each member was told retrieve their Issue Logs, Typo Logs, and a copy of the Requirements document being inspected.

Upon completion of the entry criteria, as identified by Rebecca, the meeting was called to order. The Reader, Antoine, began reading the document section by section, starting at the beginning of Chapter 3, page 10. From there, each member - in any order - would bring up their concerns about the given paragraph/bullet point. Once every member had acknowledged all issues found, the Reader would move on to the next point in the document. As the review progressed, the Recorder wrote down the issues raised by the team into the Complete Issue Log or Typo List.

This was sometimes made difficult due to the inconsistent formatting (reported in *Complete Typo List*), however, in cases of confusion the Reader would explicitly read the text in question. This process was started at *Section 3 - Requirements* of the Parking Garage document, and proceed down in the numbered order of the requirements. The review was deemed completed at the end of Attributes, or the end of the document.

Once the meeting was drawn to a close, this document was created to present the findings of the meeting and to identify if the objective of this assignment was met.

Result Summary

Purpose of this inspection is to find potential issues regarding the document called “Requirements document for a parking garage control system”.

Documentation from the individual and team inspection can be found in Appendix B - F of this document

Table 1. Preparation Time of Each Team Member

Name of Member	Time Spent	Collective Time
Ashley Brown	0.5 hours pre lab 2 hours during lab 2 hours post lab	4.5 hours
Antoine Bizon	2 hours	2 hours
Rebecca Reid	3 hours	3 hours
Ines Rosito	2.5 hours	2.5 hours

Product Appraisal: *Re-Inspect Following Rework*

This implies that a substantial portion of the document will have to be modified. Therefore, a second inspection is to be required once the author has completed the rework

Discussion:

The “Inspection Lessons Learnt Questionnaire” can be found in Appendix A of this document

As is previously mentioned in this report, the objective of this assignment is to conduct a formal inspection, providing us with exposure to real specification and exercises towards critiquing them. It is fair to state that the assignment was effective in achieving its goal and providing the members of the team with an opportunity to apply the ideas and methods identified in lecture to practice.

More specifically, through this assignment the team was able to explicitly learn and follow a process used to analyze requirements documents. It was amongst the team’s first official encounter with using the walkthrough method in this setting. However, it proved sufficient in completing the objective set out by the team prior to the start of the meeting.

The distribution of the roles and responsibilities, as discussed previously in this report, proved an efficient method in which to maximize the coverage of the inspection. Overlap did occur to some extent during the inspection meeting. However, each individual provides their own perspective and insight, therefore, there were various issues caught by a single person that were brought to the team’s attention.

Nothing is without its difficulties, as during the meeting a few problems were encountered. For example, as time progressed [especially around the 2 hour mark] individuals attending the meeting were found to lose focus. However, this was corrected by the designated Leader, who was tasked with ensuring the meeting progressed according to schedule.

Another problem encountered at some moments during the inspection meetings was knowing explicitly what section was under review. Some members may have moved on too quickly, while others still had points to say about the previous section. In order to combat this, the Reader would identify the section by reading the text aloud. [More detail on this found under the Inspection Meeting Structure]

Overall, the inspection process was ran rather smoothly. The main improvement that would be suggested is to have the actual author of the document under review to be present for the meeting. Their insight on the project would hopefully allow them to assist in clarifying any questions or ambiguities the team may have identified during their inspections.

Appendices:

APPENDIX A: Inspection Lessons Learned Questionnaire:

Note: This Questionnaire was completed as a group after the Group Inspection Meeting was called to a close as it was deemed a more effective method in which to get input.

1. *Did inspection meet author's and team's objectives? If not -- why?*

The inspection was conducted and completed at a sufficient level based on the current condition, which we were presented. The team's objective was to identify and track as many, if not all, possible issues associated with the document, "Requirements document for a parking garage control system." Through individual review, each member was capable of identifying a large amount of issues. Then, when conducting the Walkthrough review with the team, during the Inspection Meeting issues presented from each member did overlap, but a large number of them also did not. Each member brought a different perspective as to how the document should have been written.

In regards to achieving the author's objective of the inspection, we are unable to confirm or deny if they were met. This is due to the fact that the author was not present during our inspection meeting. (No one was able to take the role of the author of the Requirements document being inspected as no one in the team had written the document!)

2. *Does the team feel they were able to significantly improve the quality of the work product through the inspection?*

As previously mentioned, through our process of Inspection, we were able to identify a large number of issues with the document. When the objective of an assignment is to identify improvements, it isn't that difficult a task.

However, it should be noted that as it wasn't required for the assignment, the team did not *rewrite* the document to correct the defects found. Thus, we are limited in how much improvement we can say has been made to the document based on our actions.

3. *Did everyone have sufficient time to do preparation? If not, how much time do they need prior to inspection meeting?*

Based on the schedule the team had formulated upon our first lab session, we are able to say that there was sufficient time to prepare for the official Inspection meeting. An entire week proved enough for each team member to conduct their individual inspection and fill out the necessary forms.

4. *Did anyone use the checklist or rules for this type of work product during preparation? Was it helpful in finding defects? Can checklist/rules be improved*

It would appear that no member of the team had used the checklist for the use of preparation. Due to the numerous number of resources provided to us for this assignment, most individuals were not aware it existed. Individual inspections were completed based on the information provided to them during the course lecture.

Due to this we are unable to state whether it was helpful in finding defects or how it can be improved.

5. *Were the right participants present? If not, who missing or didn't need to be there?*

As outlined by the "Procedures for Conducting Inspection" document, most required participants were present. Moderators, Reader, Recorder and Inspector were all present during the Inspection meeting, more information regarding the roles is presented in an early section of this Report.

As previously mentioned, the author to the document being inspected was not available to us. Therefore, we were unable to determine their objects and address items on the Issue Log and Typo Log for clarification. However, despite this fact the team knew that the overall objective was to identify improvements of the requirements outlined in the document.

6. *Were the inspection entry and exit criteria followed correctly*

The objective of this assignment was to practice the Inspection Process. This required individuals of the team to identify errors and defects of the requirements document provided. Thus, we were unable to fully follow through with the actions listed on the exit criteria as we were not required to re-write the document ourselves improving upon the found defects.

In regards to the entry criteria, the team had to final say in decisions regarding whether or not to include issues in the log, as the author was not present. However, overall the team felt that the criteria was met.

7. *How could the meeting be run better?*

Through brief discussion, the team were able to identify the few following improvements:

- *Try different inspection methods:*
  - Each inspection method provides its own pros and cons. Every method would need to be attempted in order to identify the method that allows the team to work most cohesively and maximizes the efficiency of our time and work effort.
- *Use of Physical Resources*:
  - Physical resources could be used more effectively

- *“Last Call” :*
    - A “last call” from the moderator, prior to moving onto the next sections, could prove useful in minimizing the back and forth that occurred during the revision of the document.

8. *Does anyone need help being able to participate effectively in inspections?*

The walkthrough method chosen for the Inspection Meeting proved effective in allowing everyone to provide input.

Albeit, depending on how many issues and typos an individual had logged would impact how often they would present a defect. Those numbers did not impact how frequently an individual would join discussion when determining whether something should in fact be recorded in the team’s Issue Log.

9. *Are there any other suggestions for improving the inspection process?*

Any improvements to the inspection process can be drawn from the responses presented in question 7 of this questionnaire.

Other improvements discussed revolved around technology. In short, it was mentioned to ensure your files correctly save, and to make copies when possible. Else, during the Inspection Meeting you may find yourself a bit all over the place in an attempt to follow along.

APPENDIX B: Team Inspection Forms [Typo and Issue Log]

Inspection Typo Log

Record any typographical errors that you find during your inspection preparation on this list, including spelling, grammatical, formatting, and style errors. These should be corrected but need not be discussed at the inspection meeting. They will not be counted as defects.

Inspectors: /* TODO */
Scheduled Inspection Meeting Date: January 29, 2019
Work Product Description: Parking Garage Requirements

Page Number	Line Number or Section	Description of Typo
10	3.1 Functional Req.	Redundancy present between the first two sentences of this section -- Pick one or the other, not both
10	3.1 Functional Req.	*Formatting Improvement*: Lists (i.e. Description, Input, Processing, Output, etc.) should be in bullet point format
10	3.1 Functional Req.	*Formatting Improvement*: Italicize the functional requirements in list form (i.e. Description, Input, Processing, Output, etc.)
10	3.1 Functional Req.	*Punctuation*: Inconsistency in punctuation. Include "." for the end of Description, and Input
10	3.1 Functional Req.	*Punctuation*: Include an oxford comma in the last sentence of this section
10	Functional Requirements 1: Data Objects	*Formatting Error*: Inconsistent formatting of headers, size included. Should instead have the section formatted as follows: (i.e.) 3.1.1 Data Objects Functional Requirement 1
10	Functional Requirements 1: Data Objects	*Grammar Improvement*: Extra "s" added to the end of "Requirement" header
10	Functional Requirements 1: Data Objects	*Formatting Error:* Section is missing the "Description" heading (i.e.) Functional Requirement 1 ● Description [In this software the following…]
10	Functional Requirements 1: Data Objects	*Formatting Discrepancy*: Missing definition as to what "Data Objects" is -- Entry Req., and Exit Req. provide sentence describing criteria of section

10	Functional Requirements 1: Data Objects	*Formatting Improvement*: Lists (i.e. k, r, a, o, etc.) should be in bullet point format
10	3.1.1 General Req.	*Formatting Error:* Inconsistent formatting of headers, size included. Update of the header number based on previous suggestion: (i.e.) 3.1.2 General Requirements
10	Functional Req 4	*Spelling Error/Typo:* Discrepancy between previously mentioned value of k (1000 v. 10000) -- assumed to be a typo
11	Update Requirements	*Formatting Error:* Inconsistent formatting of headers, size included. Missing header numbers - update of the number based on previous suggestions: (i.e.) 3.1.3 Update Requirements
11	Update Requirements	*Formatting Discrepancy*: Missing definition as to what "Update Requirements" are -- Entry Req., and Exit Req. provide sentence describing criteria of section
11	Functional Req. 7 (first 7)	*Punctuation*: Inconsistency in punctuation. Include "." for the end of Processing
11	Functional Req. 7 (second 7)	*Formatting Error*: Incorrect requirement number tracked. Should be: Functional Requirement 8
11	Functional Req 9	*Punctuation*: Inconsistency in punctuation. Include "." for the end of Input
12	Functional Req 10	*Punctuation*: Inconsistency in punctuation. Include "." for the end of Description, Input, Processing, and Output
12	Entry Requirements	*Formatting Error*: Inconsistent formatting of headers, size included. Update of the number based on previous suggestions: (i.e.) 3.1.4 Entry Requirements
12	Entry Requirements	*Formatting Discrepancy*: Includes definition as to what "Entry Requirements" are -- Update Req., and General Req., etc. do not provide sentence describing criteria of section
12	Entry Requirements	*Punctuation*: Inconsistency in punctuation. Extra "," Included in description after "'occupied',"
13	Functional Req. 15	*Formatting Error*: A separation between "Processing and Output" is required. They should be two separate bullet points
14	Functional Req. 17	*Punctuation*: Inconsistency in punctuation. Include "." for the end of Output
14	Functional Req. 17	*Grammar Improvement*: "Synchronize the various request[s]." -- Requires addition of the s

14	Functional Req. 18	*Grammatical Improvement*: The wording to Output can be improved upon
14	Exit Requirements	*Formatting Error*: Inconsistent formatting of headers, size included. Update of the number based on previous suggestions: (i.e.) 3.1.5 Exit Requirements
14	Exit Requirements	*Formatting Discrepancy*: Includes definition as to what “Exit Requirements” are -- Update Req., and General Req., etc. do not provide sentence describing criteria of section
15	Functional Req. 20	*Punctuation*: Inconsistency in punctuation. Include “.” for the end of Input, and Output
15	Functional Req. 21	*Grammar Improvement*: Extra “s” added to the end of “Requirement” header
15	Control Unit Requirement	*Formatting Error*: Header placement would appear to be incorrect or in the very least redundant as it provides no further information
15	3.2.1 User Interfaces	*Punctuation*: Inconsistency in punctuation. Include “.” for end of section
15	Performance Req. 1	*Grammar Improvement*: “... has to be close[d] within 5 sec.”
15	Performance Req. 2	*Grammar Improvement*: Extra “s” added to the end of “Requirement” header
15	Performance Req. 2	*Grammar Improvement*: Assumption of users gender. Change “he” to something gender neutral.
15	Performance Req. 3	*Grammar Improvement*: Extra “s” added to the end of “Requirement” header
16	Performance Req. 8	*Grammar Improvement*: Current use of “good” is nondescript - valid would be a better choice of word
16	Performance Req. 8	*Word Choice Inconsistency*: The same word should be used consistently throughout, rather than swapping between “reserved” drivers and “monthly” ticket holders
16	3.4.1 Availability	*Spelling Correction*: 24 hrs/day not 24 h/day
16	3.4.1 Availability	*Grammar Improvement*: Avoid the use of contractions

Inspection Issue Log

Assignment Team: /* TODO */ **Inspection ID:** _____

Meeting Date: January 29, 2019 **Recorder:** Ines Rosito

Defects Found: 14 Major, 37 Minor **Defects Corrected: __0_ Major __0_ minor**

	Origin [*]	*Type [†]*	*Severity [‡]*	*Location [§]*	*Description*
1.	R	C	m	P10, S3.1.1 FR1, L4	Unclear whether k-r are the total or current spaces available.
2.	R	C	m	P10, S3.1.1 FR2, L2	Unclear what is entering and exiting. Should say entries and exits of vehicle.
3.	R	C	m	P11, S3.1.1 FR6	Ambiguous whether this means one exit/entry simultaneously or multiple exit/entry
4.	R	S	m	P11, S3.1.1 FR6, L2	Should be split into 2 requirements
5.	R	C	m	P11, S3.1.1 Update Requirement	Missing Definition of “Update Requirement”
6.	R	M	m	P11, S3.1.1 Update Requirement	No specification about what happens when a ticket expires

7.	R	M	m	P11, S3.1.1 FR7, L2	‘a’ needs to be updated when a pass is purchased
8.	R	C	m	P11, S3.1.1 FR7, L6	Does not specify whether r is increased or decreased
9.	R	M	m	P11, S3.1.1 FR7	Does not check whether r < 40% of k before a reserved ticket can be bought
10.	R	M	m	P11, S3.1.1 FR8, L6	Should update ‘a’
11.	R	C	m	P11, S3.1.1 FR8	‘Input’ is ambiguous - entering new total, or increase/decrease
12.	R	S	m	P11, S3.1.1 FR8	Wording of input is weird
13.	R	E	m	P11, S3.1.1 FR9, L2	Redundant to 8 -- unless this is dealing with total, and 8 deals with increase/decrease?
14.	R	C	m	P11, S 3.1.1 FR9	Dependent on the interpretation, could be redundant to FR8

15.	R	M	m	P11-12 S3.1.1 FR9	Needs to update “a”
16.	R	S	m	P11, S3.1.1 FR9	Wording of input is weird
17.	R	C	M	P11-12, S3.1.1 FR9	Processing and Output are literally the same -- defect? (Process should change)
18.	R	M	m	P12, S3.1.1 FR10	Needs to update “a”
19.	R	C	M	P12, S3.1.1 FR11, L3	Meaning of allocated is ambiguous -- depending on the interpretation can result in it just being a repeat of 8/9/10????
20.	R	M	M	P12, S3.1.1 Entry Requirements	No Requirements for door/gate closing
21.	R	M	M	P13, S3.1.1 Entry Requirements	If the driver doesn’t enter the garage, door remains open forever and the total number of cars in the garage is not accurate
22.	R	C	m	P12 S3.1.1 FR12	“If there are no reserved parking spaces”

23.	R	W	m	P12, S3.1.1 FR13, L2	Should specify non-reserved drivers need to get a ticket assuming there is an available spot for them (Should only apply to drivers with no pass)
24.	R	S	m	P13, S3.1.1 FR13	The “increase number of occupied parking spaces” should be in processing not output
25.	R	S	m	P13, S3.1.1 FR14	Processing and Output has weird wording
26.	R	S	m	P13, S3.1.1 FR14	Gate opening should only be in output, not processing
27.	R	M	M	P13, S3.1.1 FR14	No way to scan reserved tickets, therefore those reserved vehicles cannot enter the garage without taking a ticket
28.	R	C	m	P13, S3.1.1 FR15	Does not define what a ‘sequence’ is
29.	R	U	m	P13, S3.1.1 FR15	Alternative physical solution should be used to ensure cars pass (i.e. Use of an induction coil)

30.	R	W	M	P13, S3.1.1 FR16	Requires you to know about the future (“within w minutes before another car”)
31.	R	U	M	P14, S3.1.1 FR17	How does it synch? First come, first serve? Priority?
32.	R	C	m	P14, S3.1.1 FR18	Does not specify if you keep ticket or the machine eats it
33.	R	P	m	P14, S3.1.1 FR19	Does not account for real world constraints -- eg. mobility constraints
34.	R	P	m	P14, S3.1.1 FR19	What happens if you take more than 15 minutes?
35.	R	C	m	P15, S3.1.1 FR20	‘Present to non-present’ is ambiguous
36.	R	C	m	P15, S3.1.1 FR20	What happens if the gate is already closed when you cross the induction loop?
37.	R	P	M	P15, S3.2 External Interface Requirements	Contradictory sentence -- requires user interface for cashier

38.	R	C	m	P15, S3.2.1 User Interfaces	Doesn't define what a 'user interface' is
39.	R	P	M	P15, S3.2.2 Hardware Interfaces	Contradictory again -- last sentence and cashier
40.	R	P	M	P15-16, S3.3 Performance Requirements	What if the driver presses button and does not enter garage
41.	R	P	M	P15-16, S3.3 Performance Requirements	What if driver does not exit after inputting ticket
42.	R	P	M	P15-16, S3.3 Performance Requirements	What if a driver inside the garage drives over the induction plate
43.	R	P	M	P15-16, S3.3 Performance Requirements	What if the driver outside the garage drives over the exit induction plate
44.	R	P	M	P15-16, S3.3 Performance	Is ticket voided upon exit to prevent reuse

				Requirements	
45.	R	P	m	P15, S3.3 PR3	Contradictory statement when compared with PR1
46.	R	U	m	P16, S3.3 PR4	No way to physically stop a car from entering garage -- Unenforceable requirement
47.	R	W	m	P16, S3.3 PR5	Should not be changing “o”
48.	R	S	m	P16, S3.3 PR6	This is a functional requirement -- Redundant?
49.	R	C	m	P16, S3.3 PR9	Not always able to guarantee, Redundant?
50.	R	S	m	P16, S3.4 Attributes	Should attributes be a requirement?
51.	R	C	m	P16, S3.4.3 Maintainability	‘Easy’ is not testable

APPENDIX C: Antoine's Inspection Forms [Typo and Issue Log]

Inspection Typo Log

Record any typographical errors that you find during your inspection preparation on this list, including spelling, grammatical, formatting, and style errors. These should be corrected but need not be discussed at the inspection meeting. They will not be counted as defects.

Inspector: Antoine Bizon

Scheduled Inspection Meeting Date: January 29th 2019

Work Product Description: Requirements document for a parking garage control system

Page Number	Line Number or Section	Description of Typo
10	S3.1, L1-L2	The first two sentences have the same meaning, the second is redundant.
10	S3.1, L3-L6	Formatting and punctuation in list are inconsistent, list is hard to read.
10	S3.1, L7	No visual indication that the list has ended.
10	FR1	Functional requirement does not have a description section.
10	FR1, L2-L5	Formatting and punctuation in list are inconsistent, list is hard to read.
11	FR6, L2-L3	The spacing for the sentence is inconsistent with the rest of the document.
11	Update Requirements	General requirements are a subsection so Update requirements should be too. Inconsistent header size between requirement sections.
11	FR7, L6	Missing period.
11	FR8, header	FR7 repeated, should be FR8
11	FR9, L4	Missing period.

12	FR10, L1-L8	Missing periods on each sentence.
11-14	3.1	Formatting of headers is inconsistent. Some sections of functional requirements have definitions and others don't. Each kind of functional requirement should be a subsection.
13	FR15, L5	Processing and output should be separated.
13	FR16, L5	The meaning of the sentence is unclear.
14	FR17, L10	Missing period.
14	FR18, L7	Missing period.
15	FR20, L4	Missing period.
15	FR20, L6	Missing period.
15	3.21	Missing period.

Inspection Issue Log

Assignment Team: /* TODO */
Meeting Date: January 29th 2019
Defects Found: 5 Major, 10 minor

Inspection ID: _____
Recorder: Ines Rosito
Defects Corrected: ____ Major ____ minor

	Origin[*]	Type[†]	Severity[‡]	Location[§]	Description
1.	R	C	m	P10, FR1, L4	Unclear whether k-r are the total or current spaces available.
2.	R	C	m	P10, FR4, L2	Earlier in the document it states that the maximum value for k is 1000, here it states that the default value is 10000.
3.	R	W	M	P11, FR7	The if the value of r changes than the value of a should also change. k= a + r as previously stated in the document.
4.	R	C	m	P11, FR7, L6	It is unclear if “updating the value of r by 1” means incrementing it or decrementing it.
5.	R	W	M	P11, FR8, L6	If the value of r is updated, then a must also be updated.
6.	R	W	M	P11, FR9, L6	If the value of r is updated, then a must also be updated.
7.	R	C	m	P11-P12, FR9	The processing and the output are the same.

8.	R	E	m	P12, FR10-FR11	The definition of allocated is not clear, makes it hard to distinguish between FR10 and FR11.
9.	R	W	m	P12, FR13, L2	Only drivers without a reserved space should get a ticket, not all drivers.
10.	R	M	M	P13, FR14	There isn't a requirement for how a driver with a reserved space can enter the garage.
11.	R	M	m	P14, FR18	The requirement does not specify what happens if an invalid ticket is entered.
12.	R	C	m	P15, FR21	The meaning of "synchronize" is unclear.
13.	R	M	m	P15, Control Unit Requirements	There is a header for control unit requirement, but no control unit requirements in the document.
14.	R	U	M	P16, PR4	This requirement is unenforceable.
15.	R	C	m	P16	This is not a performance requirement.

APPENDIX D: Ashley's Inspection Forms [Typo and Issue Log]

Inspection Typo Log

Record any typographical errors that you find during your inspection preparation on this list, including spelling, grammatical, formatting, and style errors. These should be corrected but need not be discussed at the inspection meeting. They will not be counted as defects.

Inspector: _____Ashley Brown_____

Scheduled Inspection Meeting Date: _____January 29, 2019_____

Work Product Description: ___Requirements Document for a parking garage control system

Page Number	Line Number or Section	Description of Typo
1	3.1	Exit requirements missing from table of contents
3	1.4.1	"maximal"
3	1.4.2	"nonreserved" is not a word – use "unreserved"
10	3.1, line 10	"maximal"
10	3.1.0.1	Inconsistent formatting (title on line with functional requirement number)
10	3.1.0.1	Inconsistent formatting (no subheading, missing description)
10	3.1.0.1	"Functional Requirements" (extra s)
10	3.1.1.4	K = 10,000 vs max k = 1000 (extra 0)
10-11		Inconsistent headings between general and update requirements
11	3.1.1.7: processing	Missing period.
11	3.1.1.8	2x "functional requirement 7", no "functional requirement 8"
11	3.1.1.9: input	Missing period

12	3.1.1.10: all sections	Missing period
12	3.1.1: entry requirements	Inconsistent formatting
12	3.1.1.12	“’occupied’, if there” – extra comma
12	3.1.1.12	“if there is no space” – is should be are, make space plural
13	3.1.1.15	Processing and output combined into one section
14	3.1.1.17: output	Missing period
14	3.1.2.18: processing	Missing period
14	3.1.2.18: output	“if it is a valid,” - grammar
15	3.1.2.20: input	Missing period
15	3.1.2.20: output	Missing period
15	3.1.2.21	“Functional Requirements” (extra s)
15	After FR 22	Empty header “Control Unit Requirement”
15	3.2.1	Missing period
15	3.3.1	“has to be close” – grammar
15	3.3.2	Change driver “he” to “they”
15	3.3.2	“Performance Requirements” (extra s)
15	3.3.3	“Performance Requirements” (extra s)
16	3.4.1	“24 h/day” (why is hours shortened)
16	3.4.1	“won’t” contraction

Inspection Issue Log

Assignment Team: Ashley Brown **Inspection ID:**

Meeting Date: **Recorder:**

Defects Found: ____ Major, ____ minor **Defects Corrected: ____ Major ____ minor**

	Origin[1]	Type[2]	Severity[3]	Location[4]	Description
1.	R	S	m	P1	2 overview sections
2.	R	Q	m	P1, S3.1	Why are requirements broken up the way they are?
3.	R	C	m	P2, S1.2	“number of available parking spaces” is ambiguous – How is it dependent?
4.	R	M	M	P3, S1.4.1	Missing definition for O, A, PGCS
5.	R	M	m	P3, S1.4.1	Don’t define “res” in figure 2.1
6.	R	E	m	P3, S1.4.2	The card reader on the ticket machine is listed twice
7.	R	C	M	P5, fig 2.4	What the buttons on the control unit do is unclear
8.	R	U	M	P6, S2.1.1.1	How to get out of entrance area if parking lot is full? Especially if someone is behind you?

9.	R	M, W	M	P7, S2.1.4.1	What can be set with the device? Other places mention total number of stalls, don't mention number of occupied, two types of reserved changes??
10.	R	W	M	P8, S2.4	Is "not requiring special training" testable?
11.	R	C	m	P11, S3.1.1.6	Ambiguous- one entrance and 1 exit simultaneously or multiple entrances and multiple exits simultaneously?
12.	R	M	m	P11, S3.1.1.7	Need to decrease A at purchase?
13.	R	M	M	P11	Missing decrement to R, increase to A when a ticket expires
14.	R	M	m	P11, S3.1.1.7	Check if R < 40% of K before reserved ticket can be purchased (from P8, S2.3, L10)
15.	R	S	m	P11, S3.1.1.8	Grammar of line under "input"
16.	R	M	m	P11, S3.1.1.8	Need to update A
17.	R	C	M	P11, S3.1.1.8	What is happening? Are you entering a new total or is this an increase/decrease?

18.	R	E	M	P11, S3.1.1.9	Redundant to 8 (unless this is different, and 8 is an increase vs this is the total)
19.	R	M	m	P11, S3.1.1.9	Need to update A
20.	R	M	m	P12, S3.1.1.10	Need to update A
21.	R	C	m	P12, S3.1.1.11	What does allocated mean? (ones that are reserved, all spaces that are occupied, all unreserved spaces that are allocated, etc)?
22.	R	C	m	P12, S3.1.1.13	Doesn't specify whether the drivers should only get tickets when non-reserved spot(s) are available (it will still let people in if out of non-reserved parking, but reserved spots remain)
23.	R	W	m	P12, S3.1.1.13	Shouldn't apply to every driver – only drivers without reserved spots (see P6, S2.1.1.2)
24.	R	W	M	P12, S3.1.1.13	Drivers with reserved spots cannot get in if all non-reserved spots are full – doesn't check for reserved ticket on the way in

25.	R	M	M	P12, Entry Require-ments	Gate never closes after a car enters
26.	R	M	M	P 13	What happens if a driver doesn't enter the garage? Door stays open forever and number of cars in the garage is wrong if they back away.
27.	R	S	m	P13, S3.1.1.13	"Increase the number…" should be part of processing
28.	R	C	m	P13, S3.1.1.14	Doesn't specify which requirement 13
29.	R	W	M	P13, S3.1.1.14	Door doesn't open for drivers with reserved spots – they don't take tickets
30.	R	W	M	P13, S3.1.1.16	WHAT???? Have to know future? (Input is an event from 2 minutes in the future)
31.	R	M	M	P14, S3.1.1.17	How should the requests be synchronized? (first come first served, rank gates by priority, etc)
32.	R	U	M	P14, S3.1.2.19	The paid within the last 15 minutes thing seems bad. If someone is slow getting to their vehicle they cant get out? What about people with mobility issues who cant get to and into their vehicle that quickly?

33.	R	M	M	P14, S3.1.2.19	What happens to the paid ticket if it takes more than 15 minutes to get out? Does the driver have to repay the entire ticket or just pay the extra?
34.	R	M	m	P14	Doesn't say whether the exit machine keeps the ticket or gives it back
35.	R	C	m	P 15, S3.1.2.20	What does "present to non-present" mean
36.	R	C	m	P15, S3.1.2.20	What happens if the gate is already closed when the induction loop is crossed?
37.	R	M	m	P15, S3.2.1	What is a user interface? Is the button pressed to get a ticket a user interface?
38.	R	Q	M	P15/16 – S3.3	Are the performance requirements compatible with allowing things to happen simultaneously?
39.	R	M	M	P15	What if the driver never enters the garage (eg. Backs away)?
40.	R	M	M	P15	What if the driver doesn't exit after inserting ticket?
41.	R	M	M	P15	What if a driver inside the garage drives onto the entrance induction plate?

42.	R	M	M	P15	What if a driver outside the garage drives onto the exit induction plate?
43.	R	M	m	P15	Does a ticked get voided after it is used to exit the garage to prevent it getting reused?
44.	R	U	m	P16, S3.3.9	How to guarantee there is a parking space available? What if a car takes multiple parking spaces? (eg. Parks sideways)
45.	R	C	m	P16, S3.4.3	“Easy” isn’t testable
46.	R	E	m	P16, S3.4.4	Non-applicable section left in
47.	R	E	m	P17, S3.4.5	Non-applicable section left in

APPENDIX E: Ines' Inspection Forms [Typo and Issue Log]

Inspection Typo Log

Record any typographical errors that you find during your inspection preparation on this list, including spelling, grammatical, formatting, and style errors. These should be corrected but need not be discussed at the inspection meeting. They will not be counted as defects.

Inspector: **Ines Rosito**
Scheduled Inspection Meeting Date: **January 29th, 2019**
Work Product Description: _____

Page Number	Line Number or Section	Description of Typo
10	3.1	Formatting – List should be presented in bullet points
10	3.1	Formatting – Italicize the main points
10	3.1	Wording – Input description
10	3.1	Missing Periods – Description, Input
10	3.1 (Data Objects)	Inconsistent Heading – Data objects should be 3.1.1 (or something like that)
10	3.1	Formatting -- Missing "Description" Point
10	3.1 (Data Objects)	Formatting – List should be presented in bullet points
10	3.1.1 (FR 2)	Wording – "Should control entries and exits"
11	3.1.2 (Update Req.)	Inconsistent heading (3.1.2)
11	Functional Req. 7 (8)	Repeating of heading – Should be Functional Req. 8
11	Functional Req. 7	Missing Periods – Processing
11	Functional Req. 7 (8)	Wording – Input description
11	Functional Req. 9	Wording – Input description
12	Functional Req. 10	Missing Periods – Description, Input, Processing, Output
12	3.1.3 (Entry Req.)	Inconsistent heading (3.1.3)

13	Functional Req. 14	Wording – Output description
13	Functional Req. 15	Formatting – Separation of Processing and Output
13	Functional Req. 16	Wording – Input description
14	Functional Req. 17	Typo – “Synchronize the various request[s]”
14	Functional Req. 17	Missing Periods -- Output
14	3.1.2 (Exit Req.)	Inconsistent Heading (3.1.4)
14	Functional Req. 18	Wording – Output
14	Functional Req. 19	Wording – Processing
15	Functional Req. 21	Inconsistent Heading – Extra [s] on requirements
15	Control Unit Req.	Inconsistent Heading – Where does this guy go?
15	3.2	Inconsistent Heading – Straight up what is this formatting?
15	3.2	Missing Periods – 3.2.1 User interfaces
15	3.3	Inconsistent Heading – wrong number probably?
15	Performance Req. 1	Wording – “has to be close[d] within 5 sec.”
15	Performance Req. 2	Inconsistent Heading – Requirement[s] extra S
15	Performance Req. 3	Inconsistent Heading – Requirement[s] extra S
16	Performance Req. 9	Wording

Inspection Issue Log

Assignment Team: Ines Rosito **Inspection ID:**

Meeting Date: January 29th, 2019 **Recorder:**

Defects Found: 4 Major, 15 minor **Defects Corrected:** N/A Major N/A minor

	Origin [*]	Type [†]	Severity [‡]	Location [§]	Description
1.	R	C	m	P10, S FR1, L4	Ambiguity as to what k-r is the total of
2.	R	C	m	P10, S3.1.1 FR2, L2	Ambiguity as to whether a criterion for an entry or exit
3.	R	M	m	P11, S3.1.1 Update Req.	Missing information as to what occurs when tickets expire
4.	R	M	m	P11, S3.1.1 FR7, L2	Missing the update of the value ‘a’ when a pass is purchased (Processing and Output)
5.	R	C	m	P11, S3.1.1 FR7, L6	Ambiguity as to whether the value of r is increased or decreased in this case
6.	R	M	m	P11, S3.1.1 FR8, L6	Missing the update of the value ‘a’ (Processing and Output)

7.	R	M	m	P11-12 S3.1.1 FR9	Missing the update of the value ‘a’ Processing and Output)
8.	R	M	m	P12, S3.1.1 FR10	Missing the update of the value ‘a’ (Processing and Output)
9.	R	M	M	P12, S3.1.1 Entry Req.	Missing requirements specifying what occurs when the gate closes
10.	R	M	M	P13, S3.1.1 Entry Req.	Missing specifications for the condition that the driver opens gate, but does not enter the garage
11.	R	W	m	P12, S3.1.1 FR13, L2	Incorrect information: “Every Driver” when the requirement should only apply to non-reserved driver
12.	R	S	m	P13, S3.1.1 FR14	“Gate is open” should be included in just Output – Not a part of processing
13.	R	M	M	P13, S3.1.1	Missing requirement specifying how reserved drivers may enter garage – i.e. no method in which to scan tickets

14.	R	C	m	P13, S3.1.1 FR15	Ambiguous meaning as to what a sequence is
15.	R	W	M	P13, S3.1.1 FR16	Requirement unable to realistically be followed as it requires the ability to see the future – “Within 2 minutes before another car”
16.	R	C	m	P14, S3.1.1 FR18	Ambiguous as to what occurs to the ticket after ticket is validated
17.	R	C	m	P15, S3.1.1 FR20	Ambiguous meaning as to what ‘Present to non-present’ is
18.	R	C	m	P15, S3.2.1 User Interfaces	Ambiguous meaning of user interface – never defined previously
19.	R	W	m	P16, S3.3 PR5	Incorrect specification – the requirement should not be changing the value of “o”

APPENDIX F: Rebecca's Inspection Forms [Typo and Issue Log]

Inspection Typo Log

Record any typographical errors that you find during your inspection preparation on this list, including spelling, grammatical, formatting, and style errors. These should be corrected but need not be discussed at the inspection meeting. They will not be counted as defects.

Inspector: **Rebecca Reid**
Scheduled Inspection Meeting Date: **Jan-29-2019**
Work Product Description: **Requirements document for a parking garage control system**

Page Number	Line Number or Section	Description of Typo
10	FR:1	Inconsistent header formatting
10	FR4 line 2	10000 or 1000
11	Update Req	Needs to be 3.2?
11	FR7(2)	Mislabelled as 7. Needs to be FR8
12	Entry Req	Doesn't match update req format. Needs number?
12	FR12	"at that moment" is extraneous.
13	FR13 - output	Occupied parking spaces should be "O"
13	FR14 - processing	"Gate will open" should only be in output
14	Exit Req	Formatting doesn't match update req or entry req.
15	FR21	"has to be close" close should be "closed"
16	PR7	"entry or exit station" station should be "stations"
16	PR 8 + everywhere	Reserved tickets/monthly tickets need to have a common title

Inspection Issue Log

Assignment Team: /* TODO */_____ **Inspection ID: ____**

Meeting Date: Jan-29-2019_____ **Recorder: _____**

Defects Found: ____3 Major, ____16 minor minor **Defects Corrected: _N/A Major _ N/A**

	Origin[*]	Type[†]	Severity[‡]	Location[§]	Description
1.	R	C	m	P 10, S FR1, L4	It is number of public spaces, not number of spaces
2.	R	C	m	P 10 S 3.1 L4,5,6	Software system or system?
3.	R	C	m	P 10, S FR2, L 2	Just entries and exists? And of what?
4.	R	C	m	P 11, S FR6, L 2	N and m are not mentioned in data objects.
5.	R	S	m	P 11, S FR6, L 2	This should be 2 different requirements
6.	R	P	m	P 11, S FR7, L 2	Must also decrease A by 1?
7.	R	C	m	P 11, S FR9, L 2	Is this a repeat of 7?
8.	R	C	m	P 12, S FR11, L 3	“Allocated” isn’t clear in its meaning.

9.	R	C	m	P 12, S ER, L 1	Is this for one entrance of for any given entrance?
10.	R	S	m	P 13, S FR15, L 5,6	Processing and output should be their own sections.
11.	R	W	M	P 13, S FR16, L 5	“within two minutes before another car”, the system cannot see the future. Impossible
12.	R	U	m	P 14, S FR17 L 8,10	There’re no details on how the synchronization will be accomplished.
13.	R	C	m	P 14, S FR18, L 7	Needs to be a non-reserved ticket.
14.	R	S	m	P 14 S FR19 L 9,10	Details on the gate opening should be in output instead of processing.
15.	R	U	M	P 15 S FR21 L 2,3	There are no details on how the synchronization will be accomplished.
16.	R	U	M	P 16 S PR1/3 L 2	If a car spends ~0 seconds on, what is the gates behavior?
17.	R	C	m	P 16 S PR4 L 2	There are no details on how to enforce this

18.	R	C	m	P 16 S PR6 L 2	There may be edge cases where this is not possible.
19.	R	C	m	P 16 S 3.4.1 L 2	24/7 Availability may not be feasible in real life.