# Welcome to QVscribe!

1. Select **QVscribe** from your Word ribbon, and launch QVscribe by pressing the leftmost button on the ribbon, labelled **QVscribe**. A QVscribe window will open on the right.

## Marking your Requirements

1. First, we will mark the sections that contain the requirements that we want to analyze. Below we have provided some example requirements from a Smart Doorbell project.
2. To Mark your requirements, select each requirement one by one. First, highlight or place the cursor anywhere within *REQ1*, then select **Mark Requirements** in the QVscribe ribbon at the top of this window (or right-click and select **Mark Requirements**).
3. Complete the same steps to mark REQ2 and *REQ3.*

*REQ1 While in Daylight Mode, when the Ambient Light Reading measures below 400 lx the Control System goes into Night Mode.*

*REQ2 If it drops below 6%, then the Alert System shall send a Low Battery notification to the Mobile App.*

*REQ3 The Motion Sensor shall detect movement at distances between 5cm and 5m, and within a 150° horizontal range or a 60° vertical range.*

1. The three requirements should now be in your QVscribe window and are ready to be analyzed.

##  Marking Multiple Requirements and Marking Tables in Word

1. Depending on the format of your requirements, you can click the drop-down arrow  in the QVscribe ribbon beside the **Mark Requirements** button or the right arrow beside the **Mark Requirements** button when you right-click. QVscribe will provide other possible ways in which you can mark requirements. The options to mark your requirements are:
* Single Requirement
* Requirement Per Paragraph
* Requirement Column
* Requirement Row
* Entire Table As Single Requirement

Note: Only the applicable options for your requirement will appear.

1. You can also mark multiple requirements at the same time by using Mark Requirement Per Paragraph. First, lets remove the requirements we have marked. Go to your QVscribe window and unclick the green box  for our 3 requirements. You can also highlight the table, then press **Remove Marks > Remove Selected Marks** in your QVscribe ribbon.
2. Highlight all 3 requirements above (*REQ1*, *REQ2* and *REQ3*) then select **Mark Requirements > Mark Requirement Per Paragraph** in the QVscribe ribbon at the top of this window (or right-click and select **Mark Requirements> Mark Requirement Per Paragraph**).
3. The three requirements should now be in your QVscribe window and are ready to be analyzed.
4. Depending on the structure of your requirements, you may also be able to use the **Find Requirements** button in the QVscribe ribbon to mark. This feature is designed for documents with a common alpha-numeric pattern at the start of each requirement, such as REQ-SYS-001. Once you have at least 3 requirements marked, you can use QVscribe’s **Find Requirements** tool to help identify additional requirements in that section of the document. The **Find Requirements** tool uses the sequence of letters, numbers, and special characters at the beginning of the statements you've already marked in order to flag the other statements that match that same starting pattern. You can then select all or any of the suggestions you'd like to keep using the checkboxes on the right-hand side. If some requirements were not detected by **Find Requirements**, try adding a few more of those and then run **Find Requirements** again.

Note: **Find Requirements** does not identify requirements in tables and is not recommended for requirements that do not start with unique IDs.

1. You can also mark requirements within tables in your Word document. You can either mark the entire table as a single requirement or mark which row or column has the requirements.
2. Below we have provided the same examples from above to demonstrate how you can mark Tables.
3. Based on the format of this table, we will be marking the Requirement by Column. To Mark your requirements within this table, select the first requirement, just the Requirement Description outlined in the Description column. You can highlight or place the cursor anywhere within the description of *REQ1B*, then Select **Mark Requirements Requirement Column** in the QVscribe ribbon at the top of this window (or right-click and select **Mark Requirements > Requirement Column**).

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| Type | ID | Description | Comments |
| Req | 1B | While in Daylight Mode, when the Ambient Light Reading measures below 400 lx the Control System goes into Night Mode. | Note |
| Req | 2B | If it drops below 6%, then the Alert System shall send a Low Battery notification to the Mobile App. | Note |
| Req | 3B | The Motion Sensor shall detect movement at distances between 5cm and 5m, and within a 150° horizontal range or a 60° vertical range. | Note |

1. A pop-up window will appear asking you what Column the requirement IDs are located. In this table, the requirement IDs are located in the Column named ID. Select **ID** from the list and then click **Yes**.
2. The three requirements from this table should now be in your QVscribe window and are ready to be analyzed.
3. Since, we already have these 3 requirements in within our requirement. Let’s remove the 3 requirements from the table to proceed with our analysis.
4. Go to your QVscribe window and unclick the green box  for our 3 table requirements. You can also highlight the table, then press **Remove Marks > Remove Selected Marks** in your QVscribe ribbon.

## Quality Analysis

1. To run the analysis on these requirements, press **Analyze 3 Requirements** in the bottom right-hand corner of your QVscribe ribbon, then **View Analysis** within the pop-up.
2. Let's work through the issues flagged in each requirement.
3. In *REQ1*, QVscribe has given this requirement at 1/5 score. The issue here is that the requirement has no imperative. We need to enhance the requirement completeness by including an acceptable imperative such as shall, must, and will in between the entity responsible and the action that is required. To learn more about *No Imperatives* refer to the bottom of this document.
4. To resolve this issue, we would suggest adding an imperative to the requirement. Sometimes the whole requirement needs rewriting when an imperative is missing because it is not written as a requirement. In this case, the requirement makes sense we simply need to add an imperative to ensure the reader knows the action is required.
5. In *REQ1* above (within the word document) remove the words goes into and add shall enter. Then click **Reanalyze Selected** to see the score of your corrected requirement. It now has a 5/5 score.
6. In *REQ2,* QVscribe has given this requirement a 3/5 score. The issue here is the use of a cross-referencing pronoun. We need to reduce ambiguity by replacing pronouns (it) with the proper unique name for the entity being referenced. To learn more about *Cross-Referencing Pronouns* refer to the bottom of this document.
7. To resolve this issue, we need to clearly define what itis. In this case, it would be theBackup Battery Level.
8. In *REQ2* above, remove the word it and add the Backup Battery Level. Then click **Reanalyze All** to see the score of your corrected requirement and to update the overall score, consistency and similarity analysis.
9. In *REQ3*, QVscribe has given this requirement at 4/5 score. We have an issue with Excessive Continuances. To resolve this issue, we need to work towards a unitary requirement by removing excessive continuances (and, or). Split compound requirements into separate singular requirements. To learn more about *Excessive Continuances* refer to the bottom of this document.
10. To resolve this issue, we would suggest breaking out the requirements accordingly. This would make it 3 requirements instead of you. Note: the use of one and in the first requirement is not an issue because it is not demonstrating excessive use of a continuances and it clearly outlines a range.

*REQ3.1 The Motion Sensor shall detect movement at distances between 5cm and 5m.*

*REQ3.2 The Motion Sensor shall detect movement at a 150 horizontal sensing angle.*

*REQ3.3 The Motion Sensor shall detect movement at a 60 vertical sensing angle.*

1. Remove REQ3 from your QVscribe window, by clicking **X** on the far right of the requirement. You can also select the requirement in your document, then press **Remove Marks > Remove Selected Marks** in your QVscribe ribbon.
2. Select **Back to Marking** in the bottom left-hand corner to add in your corrected requirements. Then mark *REQ3.1,* *REQ3.2* and *REQ3.3* one by one, by highlighting or clicking the requirement, then select **Mark Requirements** in the QVscribe ribbon at the top of this window (or right-click and select **Mark Requirements**).
3. To run the new analysis, on these requirements, press **Analyze 5 Requirements** in the bottom right-hand corner of your QVscribe ribbon, then **View Analysis** within the pop-up.
4. Now, *REQ3.1*, *REQ3.2* and *REQ3.3* all have a 5/5 score.
5. The Overall Quality Score is now 5/5.

## Consistency Analysis

1. Select the **Consistency** Tab to view which units are used throughout your document (under the **Units** Tab) and terms that are used frequently (under the Terms tab).
2. The **Consistency** Analysis can be used to view, search and filter through the units and terms used across your document.
3. Select the **Units** tab just below the **Consistency** Tab, you will see the full list of units in your document.
4. Select the unit **meter** under the heading length, QVscribe will bring you directly to this unit in your document so you can quickly verify and confirm the unit.
5. Select the **Terms** tab just below the **Consistency** Tab, you will see a full list of all the noun and noun phrases used in your requirements. This list is case-sensitive as well, so you can confirm if your Terms are written accurately.
6. Select the term **Motion Sensor** within your list, QVscribe will pull up all requirements that use this term in your document where you can quickly verify and confirm the use of this term.

## Similarity Analysis

1. Select the **Similarity** Tab to view which requirements are similar and how closely they match by adjusting the **Similarity Threshold**.
2. The **Similarity** Analysis can be used to identify possible duplications and/or contradictions across requirements.
3. Select **REQ3.2** in the **Similarity** Tab, to review the matched Requirement. REQ3.2 and REQ3.3 are 84.49% similar.
4. Select the matching requirement, **REQ3.3** and a window at the bottom of your screen will pull up both requirements to help you compare and contrast. All similarities are highlighted in red, and all differences are highlighted in green.
5. Within the **Similarity** Tab, you can adjust the **Similarity Threshold** to tighten or broaden how close requirements need to be in structure and terminology to be considered similar. Depending on the size of your document or how much time and focus you want to spend on reviewing similarities, you can adjust your threshold to best fit your needs.

## Generate PDF Report

1. A PDF report can be generated with all of the information about the requirements document from QVscribe by selecting **Generate Report** in the right-hand corner.

## Easy Approach to Requirement Syntax (EARS) Templates

1. When writing requirements or working through QVscribe flagged issues, we can use the Easy Approach to Requirements Syntax (EARS) templates to simplify the writing or re-writing process.
2. We are going to write a State-Driven requirement about a Smart Doorbell. State-Driven requirements are active throughout the time the system is in a defined state.
3. To add a template to your document, select *REQ7 template* below, then select **Place Requirement Template>State-Driven** from your QVscribe ribbon.

*REQ7 template*

1. In this example, the pre-condition is in Two-way Mode, the system is the Communication System, the imperative is shall, and the system response is play audio from the Outdoor Microphone to the Indoor Speakers.
2. After filling in the blanks in your requirement, your requirement should look identical to *REQ7* below.

*REQ7 While in Two-Way Mode the Communication System shall play audio from the Outdoor Microphone to the Indoor Speakers.*

## Remove Marks and QVscribe Data

1. You can remove marks in QVscribe by selecting the cells you would like to remove, then press **Remove Marks > Remove Selected Marks** in the QVscribe ribbon.
2. You can remove all marks by pressing **Remove Marks > Remove all Marks** in the QVscribe ribbon.
3. The requirement you have marked in your document will save as a part of the document itself. This is so that if you or someone else opens the document using QVscribe, marking the requirements will not need to be completed again. If you don't want the marks to be saved or you want to start again, you can select **Clear QVscribe Data** in the QVscribe ribbon.

### Problem Type Details

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| **No Imperatives** |
| **Description** | A requirement must contain an imperative to assert that action is taken by the subject in the requirement. Without an imperative, it can be difficult to assert that what is being described is actually required. Using the same imperative consistently is the best way to reduce risk in this area. |
| **Ask Yourself** | Is this really a requirement? Without the proper use of an imperative can I be sure that each reader will understand that this is required? |
| **Possible Exceptions** | Some organizations will employ specific terms to differentiate between types of clauses such as requirements, recommendations, and allowances. Your organization can modify the imperatives list to accommodate any allowable terms it employs. |

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| **Cross- Referencing Pronouns** |
| **Description** | Cross-referencing pronouns are used in place of proper names for nouns. This can cause confusion as to which noun a requirement is referring to, especially if the requirement becomes isolated from the original context. A requirement pattern, like EARS (the Easy Approach to Requirement Syntax), can help avoid repeating the same noun in a single requirement. There are situations where it may seem like the pronoun could only be referencing one entity. It can be difficult, however, to know how someone else might interpret your writing it is best practice to completely avoid the use of pronouns. |
| **Ask Yourself** | Could someone reading this requirement assume that the pronoun is referring to something other than what is intended? Could important details be missed or ignored as a result? |
| **Possible Exceptions** | User Stories are often written in the first person. These will use pronouns like "I" and "we". Your organization can create a QVscribe configuration for analyzing user stories that allow the use of any acceptable terms. |

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| **Excessive Continuances** |
| **Description** | The excessive continuances check helps to identify compound requirements where more than one outcome is being described by identifying when more than two continuances appear in the same requirement. The use of three or more continuances in the same requirement is a strong signal the requirement needs to be split into two or more singular statements. |
| **Ask Yourself** | How easy is it to understand this requirement? If there are multiple outcomes described what would happen if one were missed? How do you track and trace each outcome if they're combined into one statement? |
| **Possible Exceptions** | If the requirement can not be split and removing any or all of the continuances makes the requirement less clear you may choose to leave them. It is possible to write a compound requirement using only one continuance so make sure these phrases are only used when absolutely necessary. |

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