Traceability Matrix

Traceability Matrix – it is a document which ensures that every requirement has a test case . Test cases are written by looking at the requirements and test cases are executed by looking at the test cases. If any requirement is missed i.e, test cases are not written for a particular requirement, then that particular feature is not tested which may have some bugs. Just to ensure that all the requirements are converted, traceability matrix is written

It is prepared before the test execution process to make sure that every requirement is covered in the form of a Test case so that we don't miss out any testing. In the RTM document, we map all the requirements and corresponding test cases to ensure that we have written all the test cases for each condition.

The test engineer will prepare RTM for their respective assigned modules, and then it will be sent to the Test Lead. The Test Lead will go to the repository to check whether the Test Case is there or not and finally Test Lead consolidate and prepare one necessary RTM document.

This document is designed to make sure that each requirement has a test case, and the test case is written based on business needs, which are given by the client. It will be performed with the help of the test cases if any requirement is missing, which means that the test case is not written for a particular need, and that specific requirement is not tested because it may have some bugs. The traceability is written to make sure that the entire requirement is covered.

We can observe in the below image that the requirement number 3 and 6 test case names are not mentioned. That's why we highlighted them, so that we can easily understand that we have to write the test case for them.

TRACEABILITY MATRIX	
Requirement Number	**Test Case Name**
1	...
2	...
3	
4	...
5	...
6	
7	...

For the requirements (3 and 6) for which test cases are not written, the cells are marked in thick border so that they are distinct and then test cases are written for them

Note:

- We go for RTM after approval and before execution so that we don't miss out on any Test Case for any requirement.
- We don't write RTM while writing the testing because it can be incomplete, and after writing the test case, we don't go here because the test case can be rejected.
- The RTM document ensures that at least there is one test case written in each requirement, whereas it does not talk about all possible test cases written for the particular requirement.

RTM Template

Requirement no	Module name	High level requirement	Low level requirement	Test case name

REQUIREMENTS TRACEABILITY MATRIX

Project Name:	<optional>
National Center:	<required>
Project Manager Name	<required>
Project Description	<required>

ID	Assoc ID	Technical Assumption(s) and/or Customer Need(s)	Functional Requirement	Status	Architectural/Design Document	Technical Specification	System Component(s)	Software Module(s)	Test Case Number	Tested In	Implemented In	Verification
001	1.1.1											
002	2.2.2											
003	3.3.3											
004	4.4.4											
005	5.5.5											
006												
007												
008												
009												
010												
011												

REQUIREMENTS TRACEABILITY MATR

Project Name:	<optional>
National Center:	<required>
Project Manager Name:	<required>
Project Description:	<required>

Example of RTM template

|	A	B	C	D	E
1	RTM Template				
2	Requirement number	Module number	High level requirement	Low level requirement	Test case name
3		2 Loan	2.1 Personal loan	2.1.1--> personal loan for private employee	beta-2.0-personal loan
4				2.1.2--> personal loan for government employee	
5				2.1.3--> personal loan for jobless people	
6			2.2 Car loan	2.2.1--> car loan for private employee	
7				———	
8			2.3 Home loan	———	
9				———	
10				———	
11					

Goals of Traceability Matrix

- It helps in tracing the documents that are developed during various phases of SDLC.
- It ensures that the software completely meets the customer's requirements.
- It helps in detecting the root cause of any bug.

Types of Traceability Test Matrix

- Forward traceability
- Backward or reverse traceability
- Bi-directional traceability

Forward traceability

The forward traceability test matrix is used to ensure that every business's needs or requirements are executed correctly in the application and also tested rigorously. The main objective of this is to verify whether the product developments are going in the right direction. In this, the requirements are mapped into the forward direction to the test cases.
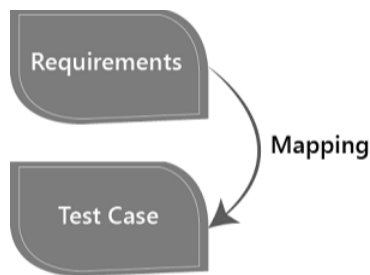

Backward or reverse traceability

The reverse or backward traceability is used to check that we are not increasing the space of the product by enhancing the design elements, code, test other things which are not mentioned in the business needs. And the main objective of this that the existing project remains in the correct direction. In this, the requirements are mapped into the backward direction to the test cases.
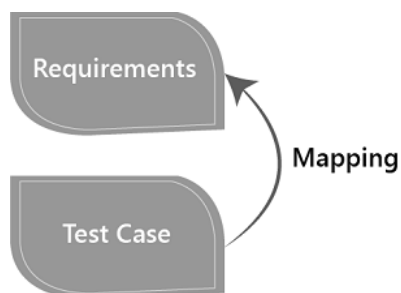
Bi-directional traceability

It is a combination of forwarding and backward traceability matrix, which is used to make sure that all the business needs are executed in the test cases. It also evaluates the modification in the requirement which is occurring due to the bugs in the application.
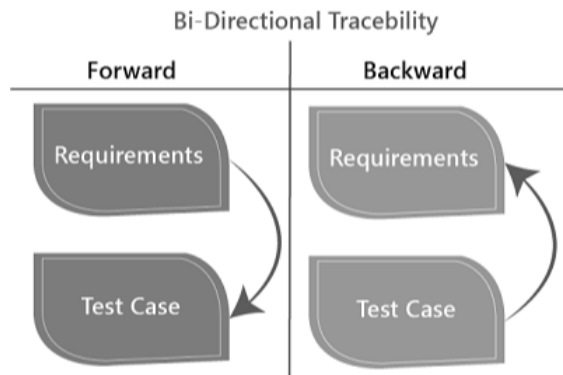
Advantage of RTM

- With the help of the RTM document, we can display the complete test execution and bugs status based on requirements.

- It is used to show the missing requirements or conflicts in documents.

- In this, we can ensure the complete test coverage, which means all the modules are tested.

- It will also consider the efforts of the testing teamwork towards reworking or reconsidering the test cases.