Software Requirements Tracking Tool (SReTT)

Project Proposal

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Version No.	Date	Details of Change	Modified by
0.1	9/8/2023	Project Proposal.	Luis Castaneda-Trejo

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Introduction

System requirements are the descriptions of the services that a system should provide and the constraints on its operations. There are different types and levels of requirements. Stakeholder requirements are at the top level. Then these requirements are divided to create the System Architecture requirements where System Engineers divide them among the main R&D disciplines (Software, Mechanical and Electrical). Each discipline manages their own requirements and divide them among their development teams.

In big companies, once the software requirements have been received by Software Engineering teams, the Software Architect creates or selects the appropriate framework and architecture that better suits the project based on similar previous projects and from deliverables from the software platform team. Then individual software component requirements are created and given to the software developers for implementation.

1.1 Problem Statement

In most big companies, every project follows strict development processes to meet product quality. In automotive R&D development there are defined processes like ASPICE that all disciplines must follow if a product goes to production and into the market but sometimes due to high resource rotation, lack of time and inexperience of some development teams, processes are not followed 100%, causing issues with deliverables and documentation.

One of these issues that is very common is the lack of traceability among different levels of requirements. In software engineering teams, sometimes developers use different words to implement a specification or requirement in code. In automotive programs that implement Functional Safety for example this is a big problem because if the product fails causing damage to the customer, he/she can sue the OEM and there can be big repercussions to it and its TIER1 and 2 suppliers like reputation damage and/or future project cancelations etc.

1.2 Scope and Objectives

The Software Requirements Tracing Tool (SReTT) is intended to receive a project containing source files and a set of requirements divided in several export files from IBM DOORs. Key words in each requirement will be searched and traced in the source code and the tool will determine if a requirement is likely to be implemented or not. Requirement IDs will also be searched to determine implementation status.

The tool can be used as part of a continuous integration (CI) strategy or used as a stand-alone tool by developers or other team members to analyze software components. Figure 1 shows a high-level picture of the project elements.

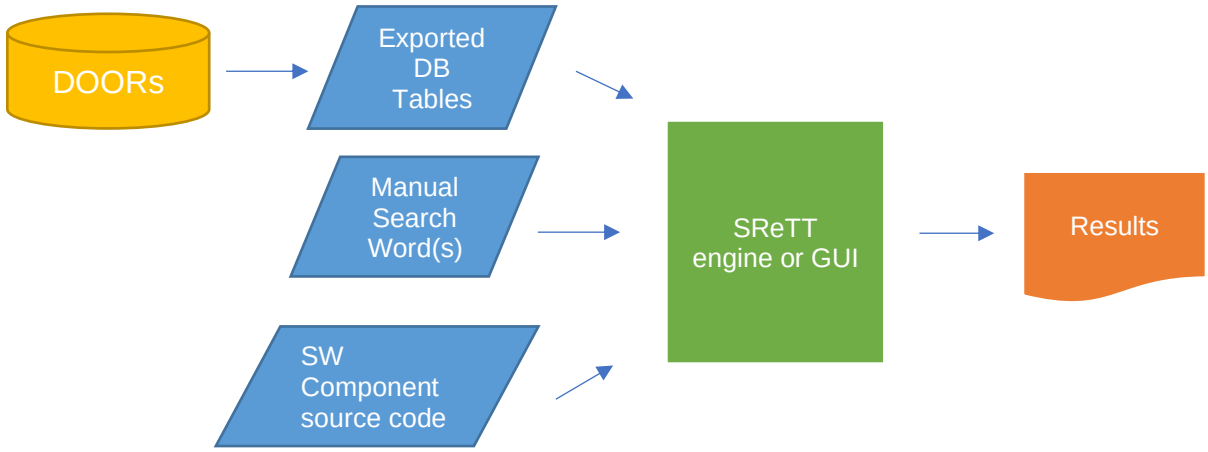

Figure 1. High Level Project Elements

1.3 Task Management

This project will be managed in the following GIT repository:

https://github.com/ecastanedat/CIS_580_Data_Analytics_in_SW_Eng.git

Table 2 shows the overall task list for the project.

TASK	ASSIGNED TO	PROGRESS	START	END
Initiation				
1. Req Definition.	L.Castaneda	0%	9/10/23	9/17/23
2. Python script dev.	L.Castaneda	0%	9/17/23	10/27/23
3. GUI development	L.Castaneda	0%	10/27/23	11/3/23
4. Refactoring and optimization	L.Castaneda	0%	11/3/23	11/8/23
5. Validation and Verif.	L.Castaneda	0%	9/19/23	11/8/23
6. Release and Report	L.Castaneda	0%	11/8/23	11/18/23

Table 2. Project General Task List

1.4 Concept

The user will specify the path to the SReTT tool and input the search words as arguments as seen in Figure 2. The GUI will be developed in LabVIEW, will call SReTT.py with the desired keywords and will present the information in a table. Both options will export and save the information as a comma-separated (.CSV) file.

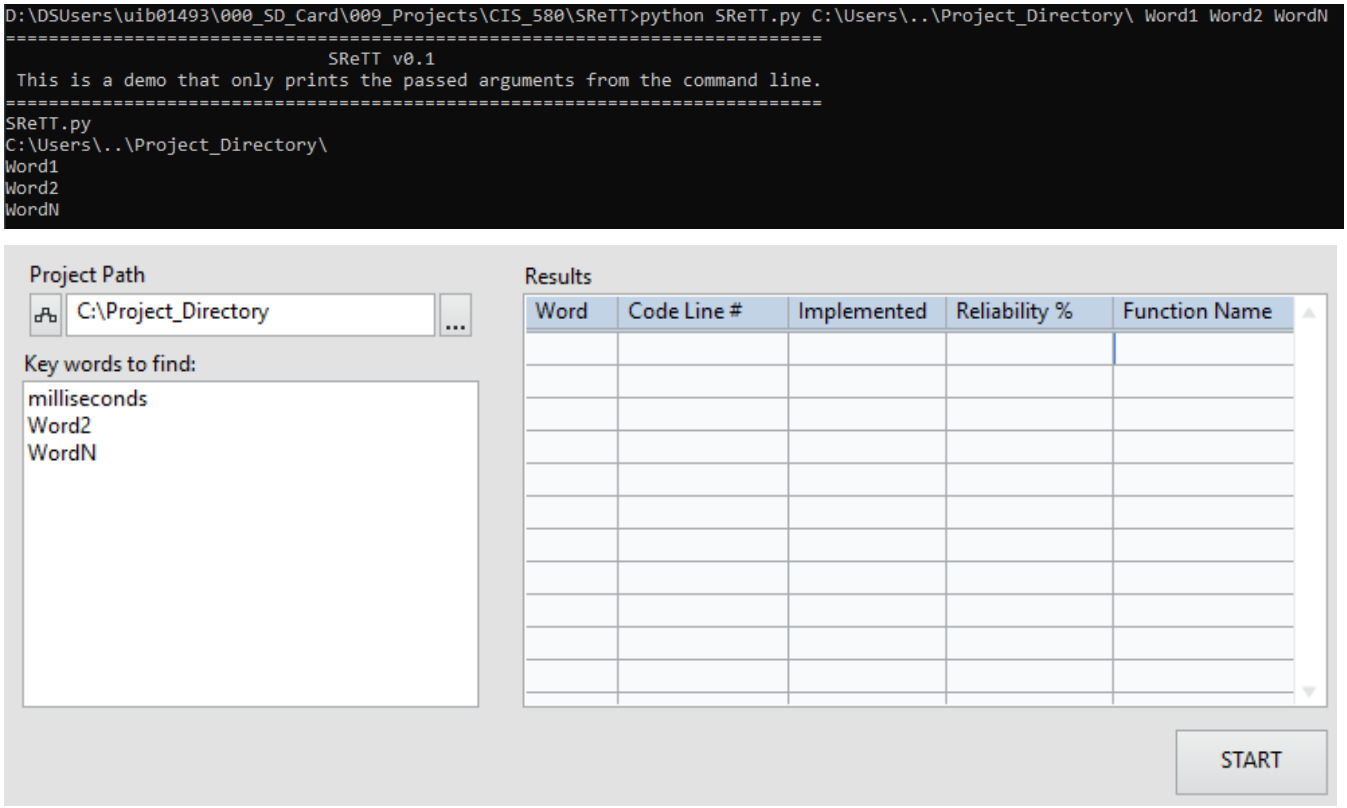

Figure 2. Command Line and GUI proposal