# Project Description:

The proposed project consists of a web-based platform for the applications surrounding the course: Theory of Computing, which is currently being taught by the University of the West Indies, St. Augustine campus., mainly for the students pursuing a degree in Computer Science. This web based platform aims to increase the number of participants who are interested in pursuing the theory of computing course while acquiring a clearer and vivid descriptive analysis particularly on how the process of NFA’s (Non- Deterministic Finite Automata) and DFA’s (Deterministic Finite Automata) fundamentals are achieved. The application will be based on the user firstly drawing any finite automata which will then be verified by the web-based platform to ensure its validity. Once this step is completed and the automata is indeed verified, the user will be able to input any random strings which will then be processed by the automata to determine whether or not the entered string given by the user is valid or not. Users of this platform will enhance their understandings of finite automata by the “Trace Through” feature which will be incorporated, to enhance the users understanding on how the basis of the automata works. The objective of this initiative is to allow users who are currently pursuing the course or may have an interest in the course to adapt a more practical approach on how the automata work thereby resulting to a more acquired knowledge on the course material.

Project Scope Statement:

Justification/Objectives:

The products that will be incorporated in the design on this project will be any computer with access to the internet. The outline of the web platform will consist of interested persons together with users who are to undergo the completion of the course Theory of Computing, will have a clearer and descriptive knowledge on the basic fundamentals needed in understanding Finite Automata. A user can create a finite state machine and use the “Trace Through” feature to determine which strings are accepted by the machine and which strings will be rejected. The user will also observe through visual representation how the completion is executed with each string entered which are valid. The invalid strings entered by the user will also be seen through visual representation, the reasons why the string is invalid as it relates to the finite automata. The web platform will also consist of an export feature which will enable users to save the current file they are currently working on or download the finite state machine diagram to facilitate for offline use whether it comprises of in class discussion or a further explanation on the understanding of these finite state machines. A “Minimization” feature will also be implemented to eliminate unnecessary states of machines in order to optimize the relevant NFA or DFA that a user designed.

Acceptance Criteria:

Conditions that should be fulfilled by the web based platform will be a working model on the verification of the finite state machine entered by the user together with a Trace Through visual representation on the validity of the strings entered by the user as it relates to the finite state machine. There will be an output which will showcase to the user which strings entered are considered to be a valid or invalid string.

Constraints:

Limitations for this project will consist of users of the web-based platform being introduced to only the fundamentals needed as it relates to the topics needed by the course outline, excluding the more in-depth aspects of the finite automata. However, over time the features of the application can be extended to include additional functionalities incorporating more complex automata concepts.

Project Beneficiaries:

The project beneficiaries will consist mainly of students who are entitled to complete the theory of Computing as part of the requirements for they degree. The project will also facilitate those users who are interested in learning about finite state machines which in terms, will increase the overall participation and interest of the Theory of Computing course.