The Minor Research Project Report already submitted to UGC

File No.: Minor Research Project File No. UGC 47-008/05

Title of Research Project: Development of Computer based Educational Tool for Preliminary Digital Electronics

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Report of work done

In the first phase of project we selected the digital circuits from the syllabus of F.Y.B. Sc. (Computer Science) practical and theory. Afterwards they were classified into groups and we developed the flowchart and algorithm for each of them making the software modular.

In the first phase of project we started developing the software for the selected digital circuits using language C and graphics of it.

We have completed the software development of digital circuits for from the syllabus of F.Y.B. Sc. (Computer Science) students. The software developed is menu driven and contains the two classes of digital circuits; hence the contents of the main menu are,

1. Logic gates
2. Combinational circuits
3. Sequential circuits

Each submenu is the individual circuits from each class. The user can select any class and is routed to an individual circuit for study, where user can visualize symbols, working of circuit in the form of truth table, expression of output of the circuit and timing diagram. The user can repeat any circuit study any number of times by using the provision to come back from any point of

software to main menu, which helps students to enjoy learning and easier memorization of subject content and this educational tool develoed will prove to be a new teaching technique as this type of learning is independent of availability of laboratory.

The software also has a facility to give inputs to digital circuits

1. through a keyboard
2. can select the input state displayed on monitor

It also provides help levels to assist user to get an idea about working of software.

After study of each session the student will go through any of the following exercises to check the depth of the topic he has studied.

1. The exercises in the form of question answer.
2. Quiz type self test after every topic.
3. Problems for solving.
4. Simplification of an equation.

The developed software is suitable for beginners. The user can repeat any circuit study any number of times by using the provision to come back from any point of software to main menu. The graphical display helps the student to easily memorize the circuit. The interactive module allows the student to key in the data and helps students to enjoy learning and easier memorization of subject content and this educational tool developed will prove to be a new teaching technique as this type of learning is independent of availability of laboratory.

The developed software can be used during teaching in class to improve instructional efficiency and learning velocity hence increases the consistency in delivery of the learning material and learning capability of a student. If instructors are trained efficiently, the time saved can be used for some other productive work.