Major Project -II Report
On

“Implementation of Unrestricted Grammar in to the Recursively Enumerable Language using Turing Machine”

Submitted in Partial fulfillment of the requirement
For the award of Degree of

MASTER OF TECHNOLOGY
(Computer Technology and Applications)
Delhi Technological University, Delhi

SUBMITTED BY
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DECLARATION

I hereby declare that the Major Project-II work entitled **“Implementation of Unrestricted Grammar in to the Recursively Enumerable Language using Turing Machine**” which is being submitted to the Delhi Technological University, in partial fulfillment of requirements for the award of degree of Master of Technology (CTA**)** in the Department of Computer Engineering, is a bonafide report of the Major Project-II carried out by me. The material contained in this report has not been submitted to any University or Institution for the award of any degree.

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Certificate

This is to certify that the Major Project-II Report entitled "**Implementation of Unrestricted Grammar in to the Recursively Enumerable Language using Turing Machine**" is the work of Jainendra Singh (Roll no. 20/CTA/2010). This project was completed under my supervision and forms a part of Master of Technology (CTA) course curriculum in the Department of Computer Engineering, Delhi Technological University, Delhi.

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JAINENDRA SINGH

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ABSTRACT

This project presents the implementation of the unrestricted grammar in to recursively enumerable language for JFLAP platform. Automata play a major role in compiler design and parsing. The class of formal languages that work for the most complex problems belongs to the set of Recursively Enumerable Language (REL).RELs are accepted by the type of automata as Turing Machine. Turing Machines are the most powerful computational machines and are the theoretical basis for modern computers. Turing Machine works for all classes of languages including regular language, CFL as well as Recursive Enumerable Languages. Unrestricted grammars are much more powerful than restricted forms like the regular and context free grammars. In facts, unrestricted grammars corresponds to the largest family of languages so we can hope to recognize by mechanical means; that is unrestricted grammars generates exactly the family of recursively enumerable languages. Turing Machine is used to implementation of unrestricted grammar & RELs for JFLAP platform. JFLAP is most successful and widely used tool for visualizing and simulating all types of automata. The Turing Machines differ from all other automata as it can work with Recursively Enumerable Languages and Unrestricted Grammar. Any language generated by an unrestricted grammar is recursively enumerable. The language $a^nb^nc^n$ is a recursively enumerable language which cannot be implemented using a Finite Automata or a PDA but can done using a Turing Machine. This requires more storage than for Context Free Languages and hence the Turing Machine with the infinite tapes, extendable in both directions is used for this.