#### REPORT ON

#### CD Mini Project Carried out on

## DEVELOPMENT AND IMPLEMENTING LALR PARSER FOR “Binary Digit Count from Decimals”

##### Submitted to

## NMAM INSTITUTE OF TECHNOLOGY, NITTE

(An Autonomous Institution under VTU, Belagavi)

*In partial fulfillment of the requirements for the award of the*

### Degree of Bachelor of Engineering in Computer Science Engineering

*By*

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CERTIFICATE

##### This is to certify that the Ms. ADALINE CONOSA D’SILVA bearing USN Of NNM22CS214 and Mr. K HARSHA S HAVALDAR bearing USN of NNM23CS505 and Mr. RAKSHITH P R bearing USN of NNM23CS507 of VI semester B.E., a Bonafide student of NMAM Institute of Technology, Nitte, has completed CD mini project on “ DEVELOPMENT AND IMPLEMENTING LALR PARSER FOR Binary Digit Count from Decimals” during January 2025 -May 2025 fulfilling the partial requirements for the award of degree of Bachelor of Engineering in **Computer Science and Engineering** at NMAM Institute of Technology, Nitte**.**

##### Name and Signature of Mentor Signature of HOD

ACKNOWLEDGEMENT

#### The satisfaction and euphoria that accompany the successful completion of any task would be incomplete without the mention of people who made it possible because “Success is the abstract of hard work and perseverance, but steadfast of all is encouraging guidance.” So I acknowledge all those whose guidance and encouragement served as a beacon light and crowned my efforts with success.

#### I would like to thank our principal **Prof. Niranjan N. Chiplunkar** firstly, for providing us with this unique opportunity to do the mini project in the 7th semester of Computer Science and engineering.

#### I would like to thank my college administration for providing a conductive environment and also suitable facilities for this mini project. I would like to thank our HOD **Dr. Jyothi Shetty** for showing me the path and providing the inspiration required for taking the project to its completion. It is my great pleasure to thank my mentor **Dr. Asmitha Poojari** for her continuous encouragement, guidance, and support throughout this project.

#### Finally, thanks to staff members of the department of CSE, my parents and friends for their honest opinions and suggestions throughout the course of our mini project.

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ABSTRACT

#### This project presents the design and implementation of a compiler front-end using Python, focusing on the lexical analysis and syntax parsing phases. The system emulates the functionality of traditional LEX and YACC tools, implementing token generation, computation of FIRST and FOLLOW sets, and parse table construction. Using Python's string processing capabilities and object-oriented features, we developed a robust lexical analyzer that efficiently breaks source code into valid tokens, followed by a parser that validates syntax against defined grammar rules.

#### The implementation demonstrates how high-level languages like Python can effectively handle compiler construction tasks typically associated with lower-level tools. Key achievements include successful tokenization of input programs, proper computation of compiler theory constructs (FIRST, FOLLOW, and parse tables), and accurate syntax validation. The project serves as both an educational resource for understanding compiler design principles and a foundation for building more advanced language processing tools.

#### This work provides valuable insights into the practical application of formal language theory while showcasing Python's versatility in systems programming domains. The modular design allows for future extensions to include semantic analysis and code generation phases.

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