

Project Final Report

SE 2112

Software Project Lab-1

Project Title: **INTELLIGENT NOTEPAD**

Submitted to

SPL-1 Assessment Committee

Bachelor of Science in Software Engineering

Institute of Information Technology

Submitted by

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Date of Submission: 27/11/2024

### Letter of Transmission

Date:27/11/2024

To whom it may concern,

Institute of Information Technology,

Noakhali Science and Technology University,

Noakhali-3814.

Subject: Submission of SPL-1 Project Report.

Sir,

I am pleased to submit the project report titled "INTELLIGENT NOTEPAD" as a partial fulfillment of the requirements in the course titled “Software Project Lab-1” (SE 2112). The project, conducted under the guidance of Md. Eusha Kadir, aims to develop a feature-rich text editor that enhances the user experience with intelligent tools. It includes functionalities such as spell checking, which suggests alternative words using the Levenshtein distance algorithm, and word prediction based on unigram, bigram, and trigram frequency models based on train data. The application also supports basic file operations like creating, opening, and saving documents.

I kindly request you to review the enclosed report and provide your valuable feedback. Please feel free to contact me at [sabbir2517@student.nstu.edu.bd](mailto:sabbir2517@student.nstu.edu.bd) for any further clarification or additional information.

Thank you for your time and consideration.

Yours sincerely,

Md Sabbir Ahmed

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Forwarded by,

Md. Eusha Kadir

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# **Introduction**

In this project, the Intelligent Notepad provides several features to make text editing easier and more efficient. The Spell Check feature automatically detects misspelled words and suggests corrections using a method called Levenshtein distance. The Word Prediction feature assists users by suggesting the next word based on training data, utilizing unigrams, bigrams, and trigrams model. You can easily create, save, and open files using the File Operations options. The Edit functions, such as copy, cut, paste, select all, and find & replace, simplify text modification. On the Insert tab, you can add special characters to your document. The notepad helps you organize your work by suggesting words and checking spelling as you type. Overall, the Intelligent Notepad offers a user-friendly environment for text editing with smart suggestions and easy-to-use tools.

# **Objectives**

**Develop a User-Friendly Notepad Application:**Create a notepad application with an intuitive and accessible interface, designed to cater to both casual users and professionals seeking advanced text editing tools.

**Spell Check and Word Prediction:**  
Develop an integrated system that enhances text editing by combining real-time spell-checking and intelligent word prediction. The spell-check feature will detect and highlight spelling errors dynamically, offering accurate correction suggestions using the Levenshtein distance algorithm for optimal precision. Simultaneously, the word prediction feature will suggest the next word based on training data, utilizing unigram, bigram, and trigram language models to ensure accuracy and efficiency. Together, these features will provide a seamless and intuitive typing experience, reducing errors and improving productivity.

**File Management:**  
Incorporate file operations such as creating, opening, and saving documents, ensuring seamless file management within the application.

**Editing Capabilities and Special Character Insertion:**  
Integrate a comprehensive suite of editing tools to streamline text manipulation and customization. In addition to fundamental functions such as copy, cut, paste, select all, and find & replace, the application will support the seamless insertion of special characters and symbols. These features, designed for efficiency, will empower users to easily modify and format their documents. By combining advanced text manipulation with easy access to special characters, the notepad will significantly enhance productivity and provide a smooth, intuitive editing experience for all users.

**Optimize for Performance and Reliability:**  
Ensure the application operates efficiently with minimal lag and accurate outputs, even when handling large text files or complex editing tasks.

# **Target Users**

The Text Prediction and Spell-Checking System is designed to be user-friendly and accessible for a wide range of users who frequently work with text. The system is particularly beneficial for the following user groups:

* **Students**: Especially useful for students writing essays, reports, or any form of academic work, as it helps with spelling errors and predicts the next word, improving writing efficiency.
* **Writers and Content Creators:** Individuals engaged in writing tasks, such as authors, bloggers, or journalists, can benefit from the word prediction feature, which enhances writing speed, and the spell checker, which ensures accuracy.
* **Professionals:** Employees in fields where written communication is critical, such as law, marketing, and customer service, will find this tool useful for quick, error-free text generation.
* **Language Learners:** People learning a new language will find the system useful in predicting words and correcting spelling mistakes, improving their writing skills and vocabulary.

The system can be integrated into various applications or platforms where text input is needed, providing real-time suggestions and corrections to enhance the user experience.

# **Application Features**

This project provides the following key features to enhance user experience and improve text editing tasks:

* **Spell Check:** Automatically checks if a word is incorrect and suggests similar words based on the Levenshtein distance algorithm, which calculates the minimum number of single-character edits required to change one word into another.
* **Word Prediction:** Predicts the next word in a sentence based on unigram, bigram, and trigram frequency maps that are trained from a text file. This feature enhances the writing speed by suggesting contextually relevant words.
* **File Operations:** The system supports basic file management functions, allowing users to create new files, open existing ones, and save their work seamlessly.
* **Editing Functions**: Includes commonly used text editing options such as copy, paste, cut, select all, and find & replace. These tools help users manage and modify text efficiently.
* **Insert Options:** Enables users to insert special characters into the document, making it easier to include symbols or non-alphabetic characters without manual input.

These features collectively improve the writing and text-editing experience by providing real-time spell checking, word prediction, and convenient editing tools, making the system a valuable tool for various users such as students, professionals, and content creators.

# **Project Overview**

This project is an all-in-one tool designed to enhance the writing and text editing experience. By integrating key functionalities such as spell checking, word prediction, and file management, it improves text input efficiency. These features work together seamlessly to create a user-friendly and efficient environment for document creation and editing.

* **Spell Check:** The system automatically detects misspelled words and suggests corrections by calculating the Levenshtein distance. This algorithm identifies the most likely alternatives based on character edits, ensuring that the text is error-free and coherent.
* **Word Prediction:** Using unigram, bigram, and trigram frequency models trained on a text corpus, the system predicts the next word in a sentence. This functionality speeds up typing and helps users maintain the flow of their writing.
* **File Operations:** The application allows users to create new files, open existing ones, and save their work. This file management system ensures that documents are securely stored and easily accessible.
* **Additional Features:**
  + Editing Functions: Includes essential tools like copy, cut, paste, select all, and find & replace, empowering users to manage and modify their text efficiently.
  + Insert Options: Users can easily insert special characters, making it convenient to include symbols, punctuation marks, and other non-alphabetic characters.

These integrated features make the system a powerful tool for both casual and professional users, offering a seamless experience for writing, editing, and formatting documents. With this system, users can focus on their content while the application manages the technical aspects of text input and file management.

# **Conclusion**

This project effectively enhances text input by providing spell check using the Levenshtein distance algorithm and word prediction based on frequency models (unigrams, bigrams, trigrams). It also supports essential file operations, including create, save, and open, along with editing functions such as copy, paste, and find & replace. The insert options facilitate the addition of special characters. Together, these features streamline the text editing process, making it more efficient and user-friendly, ultimately improving productivity.