GST CALCULATOR AND INVOICE GENERATOR

Submitted to the

SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES

by

Hemanithin.K.S (Rg No:192110426)

Under the guidance of

Dr. A. JEGATHEESAN

Professor

Institute of Computer science and Engineering

SAVEETHA SCHOOL OF ENGINEERING CHENNAI – 602 105 TAMILNADU, INDIA

DECEMBER 2023

BONAFIDE CERTIFICATE

This is to certify that the project report entitled **"**GST Calculator and Invoice Generator**"** submitted by "Hemanithin.K.S (192110426)" ,to Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences, Chennai, is a record of bonafide work carried out by him/her under my guidance. The project fulfills the requirements as per the regulations of this institution and in my appraisal meets the required standards for submission.

Dr .A. Jegatheesan

Professor

Department of Knowledge Engineering,
Saveetha School of Engineering
SIMATS, Chennai – 602 105

Internal examiner External Examiner

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ABSTRACT

The GST Calculator and Invoice Generator is a comprehensive application designed to streamline the complex process of Goods and Services Tax (GST) computations while facilitating the creation of detailed invoices. Users gain access to a versatile platform capable of accurately calculating GST amounts based on predefined rates, alongside generating comprehensive invoices reflecting inclusive GST values.

This innovative application simplifies GST computations by allowing users to input base prices and select from a range of predefined GST rates. Resultant GST amounts are calculated with precision, ensuring compliance with GST regulations and providing users with accurate financial insights.

Upon GST computation, the application generates itemized invoices, providing detailed breakdowns of transactions. These invoices exhibit item prices, associated GST rates, calculated GST amounts, and the overall payable sum, enhancing transparency and aiding in efficient financial record-keeping.

The project's significance lies in its ability to expedite GST-related processes, enhance invoicing accuracy, and simplify financial operations for businesses. With a user-centric interface and strict adherence to GST standards, this application aims to serve as an indispensable tool for users navigating the intricacies of GST computations and invoice generation.

INTRODUCTION

This comprehensive GST Calculator and Invoice Generator is a robust software solution meticulously crafted to simplify the intricate landscape of Goods and Services Tax (GST) computations and streamline the intricate process of generating detailed invoices. Designed to operate seamlessly on terminal-based platforms, this application stands as a sophisticated tool, empowering users with precise GST calculations and systematic invoice creation capabilities.

Much akin to the complexities involved in traditional methods of GST computation and invoice generation, which often entail intricate calculations and laborious manual record-keeping, this application is a dedicated effort to alleviate these challenges. It introduces a user-friendly platform that excels in accurate GST calculations and comprehensive invoice generation, simplifying financial operations for diverse users.

At its core, this application is engineered to streamline financial processes for businesses and individuals by automating GST calculations and the meticulous creation of invoices. The software facilitates hassle-free computation of GST amounts, leveraging predefined rates to ensure accuracy and stringent adherence to GST regulations. Moreover, it proficiently generates detailed invoices that offer a holistic view, showcasing item prices, associated GST rates, calculated GST amounts, and the overall payable sum, thereby enhancing transparency and simplifying financial record-keeping.

Tailored to function efficiently on terminal-based environments, this application obviates the need for intricate installations or dependencies. Its operational efficiency and precision aim to serve as an indispensable tool for individuals and businesses navigating the complexities of GST-related computations and invoice generation.

DESCRIPTION

The GST Calculator source code package is a robust tool designed for terminal-based computation of Goods and Services Tax. Crafted without the complexities of a graphical interface or web dependence, this package enables users to swiftly calculate GST amounts and total invoice values. Operating seamlessly within the terminal environment, this tool streamlines the process by validating GST codes, computing GST amounts based on rates, and generating comprehensive invoices. Ideal for users seeking efficient and hassle-free terminal-based GST calculations, this code package offers a practical solution tailored to the command-line interface, ensuring accurate and rapid GST computations.

Main Features:

- ♣ Streamlined Terminal Interface
- ♣ Customization and Flexibility
- ♣ Adaptability to Terminal Screen Sizes
- ♣ Scalable Question Management

Terminal Operation:

Upon initiation, users interact with the application through the terminal interface. The interface presents a login prompt where users enter their credentials to access their individual accounts within the terminal environment. Additionally, provisions for new user registrations are available within the terminal interface. Post-login, users navigate through the interface to engage with specific GST computations processes.

Processes and Validation:

The system opens directly to the main interface, offering users a selection of GST computation categories. Users input item-specific details such as quantity and unit price for each item, followed by choosing the applicable GST schedule. The system processes this information to compute GST rates, amounts, and total invoiced values for each item, culminating in an overall invoice.

During this process, the system validates the entered data, ensuring accurate computation of GST values based on the selected schedules. It distinguishes correct and incorrect answers, displaying them respectively in green and red. Additionally, it integrates a timer feature to manage time-bound calculations, and user interaction is facilitated using radio buttons for options and a standard button to conclude tasks.

This streamlined system offers a direct pathway for users to input item details, select GST schedules, and generate comprehensive invoices. It incorporates robust validation mechanisms to ensure accurate GST computations and a user-friendly interface for seamless interaction during the calculation and invoice generation process.

Creating layout

The terminal interface for the GST calculator and invoice generator is designed to be straightforward and text-based. The application prompts the user through the terminal, displaying sequential messages to guide the user through each step of the process. It begins by soliciting the necessary information such as item quantities, unit prices, and GST schedules through text input or numeric entry. Each step is clearly delineated, ensuring the user understands the expected inputs and the purpose of each stage. The terminal layout maintains simplicity while efficiently capturing the essential data for GST calculation and invoice generation, delivering a user-friendly experience within the terminal environment.

ADVANTAGES

- Efficiently validates GST codes, ensuring adherence to the specified format.
- Facilitates precise GST calculations for multiple items, offering accurate tax rates and comprehensive invoice totals.
- Streamlined interface through the terminal, ensuring ease of use and accessibility for users familiar with command-line environments.
- Enables the generation of detailed invoices, aiding in organized record-keeping and documentation of transactions.
- Provides an option to print detailed invoices to a file, enhancing documentation and data archiving capabilities..
- Utilizes local terminal resources, ensuring privacy and security of user information without relying on external web services or platforms.

SYSTEM REQUIREMENTS

1. Operating System: Compatible with Windows, macOS, and Linux.
2. Java Runtime Environment (JRE): Installed Java SE Development Kit (JDK).
3. Terminal/Command Prompt Access: Required for running Java programs via the command-line interface.
4. Disk Space: Minimal storage capacity for storing application files and data.
5. Memory (RAM): 2 GB of RAM for smooth execution
6. Processor: Intel Core i3, AMD Ryzen 3.
7. Input Devices: Support for standard keyboard input for data entry and interaction.
8. Optional Printing: Capability to print generated invoices to a file.

EXISTING WORK

In the domain of GST calculation and invoice generation tools, the prevalent options primarily revolve around web-based applications or desktop interfaces. These solutions typically emphasize graphical user interfaces (GUIs) and integration with web platforms, offering a diverse range of functionalities for users. However, a significant gap exists in the market regarding dedicated tools tailored for terminal-based operations, limiting options for users who prefer or require command-line functionalities.

Current tools heavily prioritize GUIs and web interconnectivity, which might not cater to users seeking swift and efficient solutions exclusively within the command-line interface. Terminal-centric GST calculators and invoice generators could address this gap, providing prompt calculations and invoice creation without relying on web connections or intricate graphical interfaces.

PROPOSED WORK

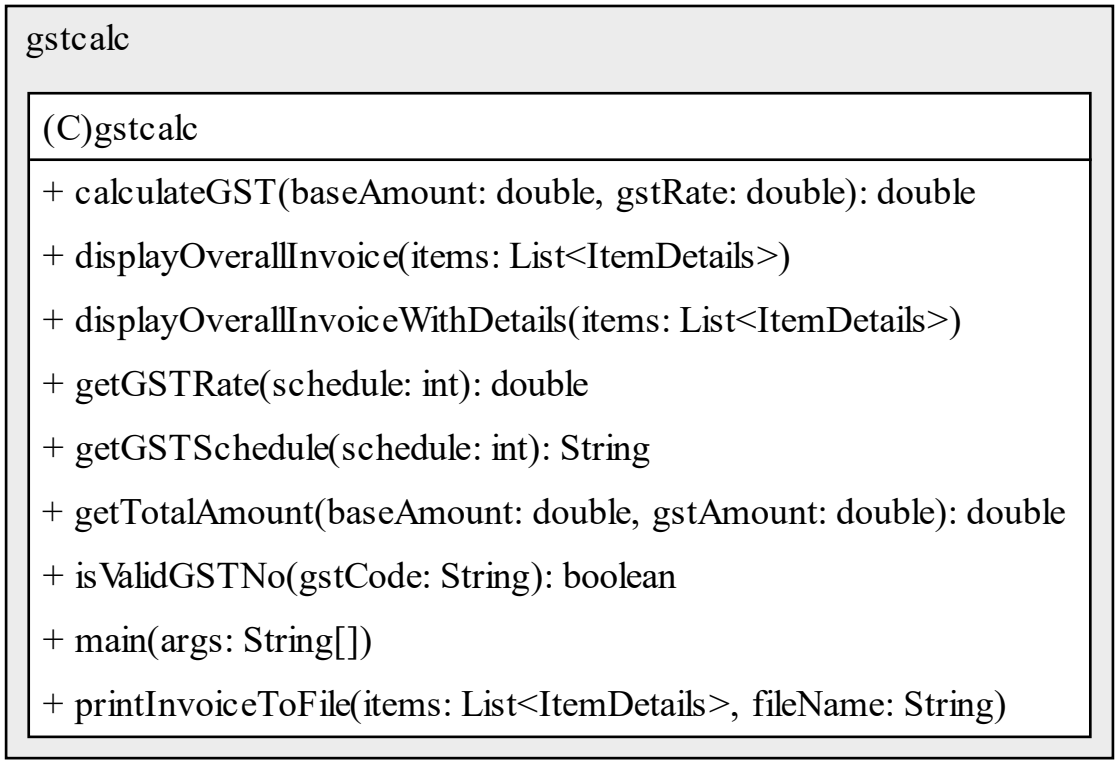
Embarking on an innovative journey, we're crafting a Java-based GST calculator and invoice generator designed explicitly for terminal use, addressing a distinct gap in the current market. While existing tools predominantly favor web or GUI interfaces, our focus lies in developing a versatile, terminal-centric solution. This terminal-oriented application will enable users to swiftly compute GST values and generate invoices without the need for graphical interfaces or web dependencies. Our unique approach caters directly to users who prefer command-line environments, delivering precise GST calculations and invoice generation. By harnessing Java's capabilities within a terminal framework, our tool aims to meet the demands of individuals seeking efficient, command-line-centric solutions for their financial tasks. This initiative aligns with the increasing demand for accessible terminal-based tools, providing a streamlined and effective option for users who prioritize command-line interactions for GST-related computation.

TECHNOLOGY USED

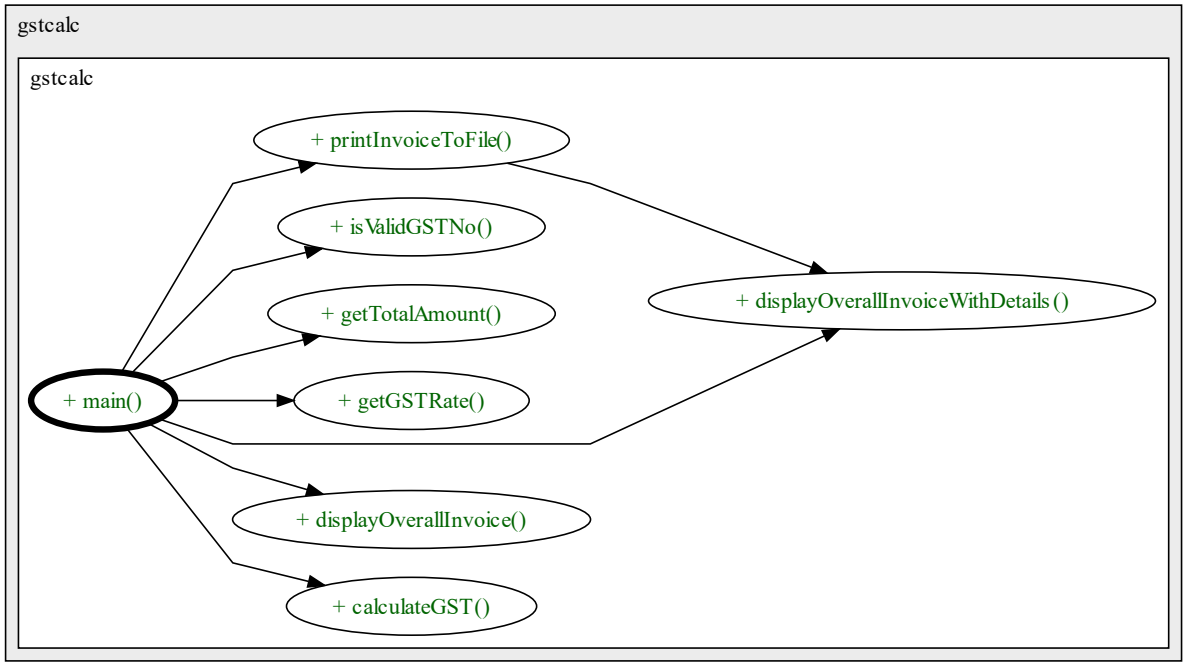
1. **Visual Studio Code (VS Code):** Employed as the primary Integrated Development Environment (IDE) for Java code creation, debugging, and execution. VS Code offers a suite of features and extensions tailored for Java development.
2. **Java Development Kit (JDK):** Essential for Java programming, JDK provides a comprehensive set of tools, libraries, and the Java Runtime Environment (JRE) necessary for compiling and running Java applications.
3. **Terminal Integration**: Leveraging the integrated terminal within VS Code, facilitating seamless interaction with the command line. This allows for direct execution and interaction with the Java application without relying on graphical interfaces.
4. **Java Standard Libraries**: Utilization of Java's extensive standard libraries and classes for various functionalities within the GST calculator code. This includes built-in functionalities for arithmetic calculations, input/output operations, and other core functionalities inherent to Java.
5. **VS Code Extensions**: Potentially employing specific VS Code extensions catering to Java development, enhancing the IDE's capabilities for debugging, code analysis, and other programming tasks.

This setup highlights a development environment centered on Java programming, harnessing VS Code's capabilities and the JDK to build and execute the GST calculator code entirely within a terminal-based context.

CLASS DIAGRAM



CALL DIAGRAM



SCREENSHOTS(OUTPUTS)

```
Choose an option:
1. Validate GST Code
2. Calculate GST
3. Exit
1
Enter the GST code to validate:
33AAFTS0845L1ZB
Valid GST code.
Choose an option:
1. Validate GST Code
2. Calculate GST
3. Exit
1
Enter the GST code to validate:
AAAAAA123NJDKJF
Invalid GST code format.
Choose an option:
1. Validate GST Code
2. Calculate GST
3. Exit
3
Exiting the program. Thank you!
```

```
1. Validate GST Code
2. Calculate GST
3. Exit
2
Enter the number of items:
2
********* Item 1 *********
Enter the quantity:
3
Enter the unit price:
55
Choose GST Schedule for Item 1:
1. Nil Rate
2. 0.25% Rate
3. 3% Rate
4. 5% Rate
5. 12% Rate
6. 18% Rate
7. 28% Rate
2
********* Item 2 *********
Enter the quantity:
3
Enter the unit price:
85
Choose GST Schedule for Item 2:
1. Nil Rate
2. 0.25% Rate
3. 3% Rate
4. 5% Rate
5. 12% Rate
6. 18% Rate
7. 28% Rate
5
Do you want to display detailed information for each item? (Y/N)
Y
```

```
********** Overall Invoice with Details **********
********** Item 1 Details **********
Quantity: 3.0
Unit Price: Rs. 55.0
GST Schedule: 0.25% Rate
GST Rate: 0.25%
GST Amount: Rs. 0.4125
Total Amount (including GST): Rs. 165.4125
******************************
********** Item 2 Details **********
Quantity: 3.0
Unit Price: Rs. 85.0
GST Schedule: 12% Rate
GST Rate: 12.0%
GST Amount: Rs. 30.6
Total Amount (including GST): Rs. 285.6
******************************
Overall Total Amount (including GST) for all items: Rs. 451.01250000000005
************************************
Do you want to print the detailed invoice to a file? (Y/N)
Y
Enter the file name (e.g., invoice.txt):
invo.txt
Invoice printed to invo.txt
```

CONCLUTION

The development of a terminal-based Goods and Services Tax (GST) calculator in Java marks a strategic step towards providing a command-line interface for efficient and accurate tax computation. This application underscores the potential of Java programming in creating versatile, yet straightforward tools tailored for terminal environments. With a primary focus on functionality over graphical user interfaces (GUI), this GST calculator fills a critical gap for users preferring command-line tools for GST-related computations.

The fundamental aim of this application is to deliver a simplified, yet comprehensive tool for calculating GST amounts without the need for web connectivity or elaborate graphical interfaces. It stands as a testament to Java's flexibility and its adaptability in crafting practical solutions, specifically in command-line scenarios. By prioritizing back-end computations, it ensures quick, precise, and reliable GST calculations, aligning with the needs of users seeking immediate and accurate tax figures.

One of the significant advantages of this GST calculator lies in its platform-agnostic nature, functioning seamlessly across various terminal environments without reliance on specific operating systems or intricate hardware configurations. Its command-line interface fosters accessibility and ease of use, allowing users to perform GST calculations swiftly and efficiently without the need for an internet connection or complex software installations.

In essence, the development of this GST calculator in Java demonstrates the value of command-line-centric applications, offering users a pragmatic, functional, and reliable solution for GST calculations while showcasing Java's adaptability and prowess in creating purpose-oriented tools for terminal environments

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