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A Modern GUI Desktop Application with Advance Features for GST Billing and Management

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ABSTRACT
GST, which is also known as the Goods and Services Tax is outlined because of the gigantic oblique tax structure designed to support and enhance the economic progress of the nation. We have designed a GUI based system to implement GST in billing as well as to provide logistics support for the user by providing real-time logistics tools. We have decided to create a GUI desktop application with advanced Features like Data visualization and invoice generation for Bill creation and Management with the help of Python's tkinter framework. As Tkinter is a python binding of the GUI toolkit it is comparatively more feasible than other GUI Modules.

I. INTRODUCTION

What is a GUI application?

An interface developed by Xerox Alto in 1970s, it was a response to early problems of inefficient early usability, command-line text-based interfaces for users. GUI would become the centre of user-centered design in applications providing the capability to operate computers through direct manipulations of buttons, windows, scroll bars, cursors, windows, menus and the pointing device. Many modern-day user interface features shows GUI capabilities Our system provides for an interface which will allow the user to calculate real-time billing with the help of different modules implemented with the help of Python The user will also be able to look at different logistical supports using our Application at high accuracy which will save time and resources

II. METHODOLOGY

Module 1: TKinter

All the required GUI features are provided by Tkinter

1. It provides an interface for the Tk toolkit developed in Tool Command Language with support for MAC OS, Linux and Windows. It is native in MAC OS and Linux and easily installable on Windows.
2. Geometry, widgets and managements are the three main concept of Tkinter
3. Widgets: Often referred to as window elements, they are visible on the interface. Some examples are labels, buttons, frames, checkboxes, scrollbars and tree views. We have used widgets such as "GStNo", "Name" and their respective text entries, labels for data and time scrollbars and various buttons such as "records', "generate bill", "add row".
4. Geometry Management: An crucial step of interface design is to arrange the widgets on the window. An useful method to do that using Tkinter is by geometry manager like "StringVr()". It is a method available to monitor changes to variables of tkinter if they occur
5. Geometry Management: An important step of interface design is to organize the widgets on the screen window. The most useful method to do that using Tk, or Tkinter, is by a geometry manager, like "StringVar()". In practice, "StringVar()" is a method available to so that you can easily monitor changes to tkinter variables if they occur
6. Event Handling: It manages the loop of the event over the window, controlled by the operating system, keystrokes, buttons, mousr movement and resizing of windows. Individual widgets knows how to respond to events. It provides a callback which can be assigned to a procedure in python. A method in Tkinter that destroys a widget is destroy() method. We

need to destroy a process when it is completed by some user to free memory and clear screen. This method achieves all this. Required things are saved by using save() method

Module 2: **TIME AND DATETIME MODULE**

1) strftime(), a Python time method converts a struct time or tuple to a specified format. If it is not provided local time returned by localtime() is used. It helps in the time of billing

2)A python data is not a data type of its own, but a module named adtetime can be imported to work with data objects and dates. The data can be acquired at the timing of the billing.

Module 3: **IMAGETK MODULE:**

It contains support to modify and create images and photo objects from PIL images. We can set width and height of the image by width() and height() functions respectively

Module 4: **PYTHON TKINTER CANVAS**:

It is used to add graphics to python applications. It can draw graphs and plots with python application. The syntax to use canvas is as given w = canvas(parent,option)

Module 5: **REPORTLAB MODULE:**

The add-on utility PdfEncrypt is used for ReportLab's enterprise reporting tools. PDF files can be encrypted using PdfEncrypt. It also allows users and password owners certain capabilities such as pasting copied files and printing files. We can use this module to generate PDF reports as well as to save those reports.

Module 6: **IMPORTLIB MODULE:**

It has a two-fold purpose. One is the implementation of statement in the source code. This provides an implementation which is portable to any interpreter of Python. This also provides easier implementation that the one implemented in languages other than Python

Two, it is easier for users to make their own objects as the components are exposed in this package. It makes it easy for the user to participate in the import process.

Module 7: **MATPLOTLIB MODULE**

It is a plotting library for programming in python and its mathematical extension is NumPy. It provides an API for embedding plots into applications using GUI toolkits like wxPython and Tkinter.

It is a collection of functions like MATLAB. Each pyplot makes changes to a figure. For example: creates a figure, creates a plotting area in a figure, plots some lines in a plotting area, decorates the plot with labels, etc

Module 8: ***XLSXWRITER MODULE:***

It can be used to write numbers, formulas, test and hyperlinks to multiple Excel 2007 worksheets. It supports full formatting and formatting features, defined names, charts, data validation and auto filters. When inputs are entered the sheet is simultaneously created.

Module 9: **MYSQL.CONNECTER MODULE:**

It supports almost all MySQL version 5.7 features. It allows us to convert parameters value between MySQL and Python.

It enables the access of MySQL to Python programs, using an API that is compliant with Python Database API Specifications. It helps to retrieve the data in the proceedings of the project

Module 10: **SCHEDULE MODULE**

Schedule is an scheduler for periofic jobs that use the patterns known as builder pattern for configuration. It lets you run Python functions at predetermined intervals us a simple syntax.

It Schedules a task at a given time every day or a particular day or week. Basically, it matches our system;s time to that of set by us. Once the scheduled time and the time of the system matches the job function is called.

III. EXISTING WORK

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Python is being widely used to create scripts which cover different necessities in computational scenario.We evaluated the previous techniques to build a GUI based system and thus our approach brings ideas from the previous studies .Tkinter, or "Tk interface", is a module of python that provides an interface to Tk GUI toolkit, developed in TCL (Tool Command Language) and multiplatform, with support for Linux, MAC OS and MS Windows. Tk is natively present in Linux and MAC OS, and can be easily installed on MS Windows, it is not part of Python. Tkinter is part of Python, being called "Tkinter" in versions prior to 3, and "tkinter" in version.Tkinter is the standard GUI library for Python. Python when combined with Tkinter provides a fast and easy way to create GUI applications. Tkinter provides a powerful object-oriented interface to the Tk GUI toolkit .GUI is nothing but a desktop app that provides you with an interface that helps you to interact with the computers and enriches your experience of giving a command (command-line input) to your code. They are used to perform different tasks in desktops, laptops, and other electronic devices.
Benin's decision to use Python to build a GUI was based on previous experience with such a programming language in LNLS. There is a library package, called Py4Syn, developed in LNLS with Python version 3.4 and in use to control beamline devices, like motors and detectors, and to operate a sequence of actions to perform specific experiments by synchronization.
Widgets, geometry management and event handling are the three main concepts of Tk, which also apply for Tkinter. Thus being an efficient tool to create frames, labels, buttons, text entries, checkboxes, tree views, scrollbars, and text areas.Combination of nested frames and grid is the better approach to design a Tk/Tkinter interface.

IV. PROPOSED WORK

When the GUI Application Gets Open We have an Interface ready to Make Billing.

We can Add rows by the Add Row Button.

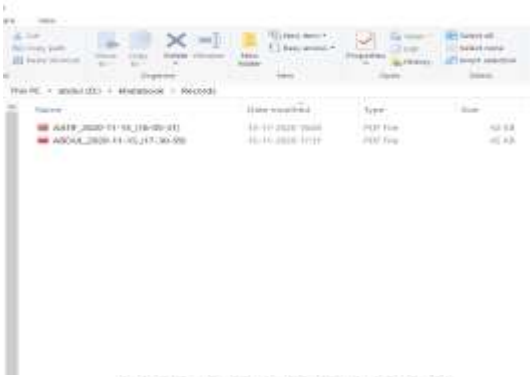
By Entering the required input fields as Name, GST No and Phone No .We can then enter details regarding items , rate and Quantity.

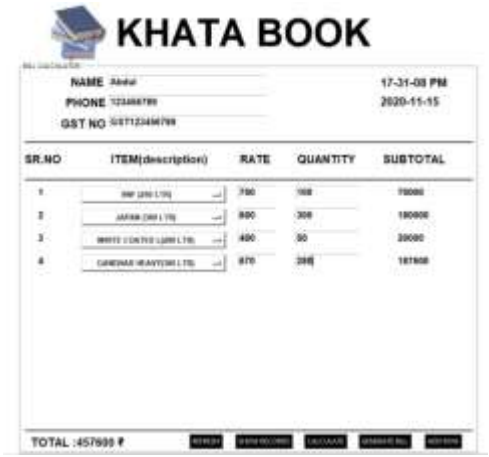
After filling all such Details One can now hit the print Bill Button to print the Bill.

The Bills will get stored in the Record Folder in a named fashion.

The Module can be refreshed by the Refreshed Button.

Data Visualization and excel invoices features will be added soon.





VI. RESULTS AND DISCUSSION

PDF MODULE (REPORTLAB)

ReportLab is the time-proven, ultra-robust open-source engine for creating complex, data-driven PDF documents and custom vector graphics.

It's free, open-source , and written in Python.

The ReportLab Toolkit has evolved over the years in direct response to the real-world reporting needs of large institutions.

The library implements three main layers:

A graphics canvas API that 'draws' PDF pages

A charts and widgets library for creating reusable data graphics.

A page layout engine - PLATYPUS ("Page Layout and TYPography Using Scripts") - which builds documents from elements such as headlines, paragraphs, fonts, tables and vector graphics.

EXCEL MODULE (XLSWRITER)

XlsxWriter is a Python module for writing files in the Excel 2007+ XLSX file format.

XlsxWriter can be used to write text, numbers, formulas and hyperlinks to multiple worksheets and

it supports features such as formatting and many more, including:

1. 100% compatible Excel XLSX files.
2. Full formatting.
3. Merged cells.
4. Defined names.
5. Charts.
6. Memory optimization mode for writing large files.

DATA VISUALIZATION (MATPLOTLIB)

Matplotlib is one of the most popular Python packages used for data visualization.
It is a cross-platform library for making 2D plots from data in arrays.
It provides an object-oriented API that helps in embedding plots in applications using Python GUI toolkits such as PyQt, WxPython Tkinter.
It can be used in Python and IPython shells, Jupyter notebook and web application servers also.
Matplotlib was originally written by John D. Hunter in 2003. The current stable version is 2.2.0 released in January 2018.

VII. CONCLUSION

In this project we have acquired instances of TkInter and Data visualization. Now, we know that Data Visualization is an interdisciplinary field that deals with the graphic representation of data. It is a particularly efficient way of communicating when the data is numerous as for example a Shopping Bill. From an academic point of view, this representation can be considered as a mapping between the original data(usually numerical) and graphic elements (for example, lines or points in a chart). The mapping determines how the attributes of these elements vary according to the data.
We have successfully calculated the bill and stored it in our database with the help of TkInter. Tkinter is a python binding to the TK GUI toolkit and is python's de facto GUI. Finally, when it comes to the development of billing models of your own, we looked at the choices of various development languages, IDEs and Platforms. Thus with the help of TkInter, SqLite and using the concepts of Data visualization we have implemented our billing project.

VIII. ACKNOWLEDGMENT

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