# **Application Report**

## Design of Application:

* **Language Used:** I developed my program using the “Tkinter ” package from Python. “Tkinter” is package from python library which uses same syntax for codes, additionally widgets are used such as buttons, labels, check buttons etc.
* I used varieties of widgets to design the application such as labels, buttons, check buttons etc.
* **Labels:** I used labels in all of the menus that I developed for the application. Labels were used to provide basic instructions.
* **Buttons:** I used buttons to connect main menu to different menu. I also used closing buttons to close the current open menu.
* **Check Box:** I used check box widget to let user select what type of calculation they want to do before they input data.
* **Entry fields:** I used entry fields to get user’s input and to do relevant calculation steps which are displayed after the user enters relevant data on screen and presses calculate.

## Code Fragments & Explanation:

**Packages and Library :** Initially I imported the “Tkinter” module to create the GUI interface. I also imported math and numpy\_financial to mathematical a business calculation.

Graphical user interface, application

Description automatically generated

**Menu Properties:** Main menu was named ‘mainWin’ in the source code. I provided and icon, the geometrical size, and a background colour for the main menu.

* .config method is used to set the background colour.
* .iconbitmap method is used to set the favicon icon.
* .geometry method is used to set the size of the screen for the menu
* .mainloop() method is used keep the application running.

Text

Description automatically generated

Image: Main Menu Properties

Text

Description automatically generated

Image: Menu 1 Properties

Text

Description automatically generated

Image: Menu 2 Properties

Text

Description automatically generated

Image: Menu 3 Properties

**Code for Labels:** I used varieties of attributes for all the labels in the code.

* The first attribute is the placement of the label (name of the menu).
* ‘text’ attribute is used to set the text of the label.
* ‘bg’ attribute is used to select the colour using the hex code of the colour.
* ‘padx’ and ‘pady’ is used here to add padding around the label.
* ‘font’ is used to change the size and style of font.

**Graphical user interface, text

Description automatically generated**

Image: mn1lbl1 refers to menu 1 label 1.

**Code for Buttons :**

* First attribute is the placement, in the code below it is place in menu1.
* ‘bg’ attribute is used to change the background colour of the button.
* ‘bd’ is used to add border around the button
* ‘height’ and ‘width’ attribute is used to set the height and width of the button on screen.
* The other attributes are the same as the ones in Labels.

**Graphical user interface, text

Description automatically generated**

Image: Example of button used in the code. All other buttons have the same structure.

**Code for Check Box:**

* ‘variable’ attribute is used to store user selection in a variable.
* ‘onvalue’ and ‘offvalue’ are attributes of check button which sets the value when the check box is ticked or unticked by user.
* The rest of the attributes not mentioned are same as the attributes for the labels and buttons.

**Graphical user interface, text

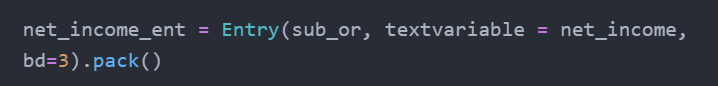
Description automatically generated**

****

Here the on value and off value from the check button is used to determine what calculation the user wants to do.

**Code for Entry Fields**

* ‘textvariable’ attribute is used to save the user input in a variable.
* ‘bd’ attribute is used for the border of the entry field.

****

**Code for Calculation Steps**

* First my program determines what user wants to calculate by implementing check buttons and getting the value from the check buttons.

****

* Then the value of the entry field variable is retrieved using the get() method into another variable which will be used for calculation.

**Text

Description automatically generated**

* The round method is used to round up the result into two decimal point.

## Screenshots of the Application

**Main Menu :** I divide created three different menus for three different tabs, each tab will include different business and financial calculations. Each menu is connected to a button which will lead to that specific menu. The description for the sub menu related to each button is given above the button. The main menu is simple with clear instructions and it is not filled with any unnecessary widgets.

Graphical user interface, text, application, email

Description automatically generated

**First Menu :** All the menus have similar structure. The first menu has a label on top asking for user to select one calculation. After the first label it has four buttons which will lead to four different menus for different calculation. The name of the menu is stated on the button.

**Graphical user interface

Description automatically generated with medium confidence**

Graphical user interface, application

Description automatically generated

Image: Profitability Ratios Menu

Graphical user interface

Description automatically generated

Image: Liquidity Ratios Menu

Graphical user interface

Description automatically generated

Image: Leverage Ratios Menu

Graphical user interface

Description automatically generated

Image: Operating Ratios Menu

**Second Menu :** Second menu is relatively smaller than the rest of the other menus. It has only two buttons leading to future value or present value calculation menu.

**Graphical user interface, diagram

Description automatically generated**

**Graphical user interface

Description automatically generated**

Image: Future Value Menu

**Graphical user interface

Description automatically generated**

Image: Present Value Menu

**Third Menu :** Third is relatively bigger than the other menus. Because it has more input fields then the other menus.

Table

Description automatically generated

**Result of Calculation (Example for some menu):**

**Graphical user interface, application

Description automatically generated**

Image: Liquidity Ratio Calculation

Graphical user interface, application

Description automatically generated

Image: Present Value Calculation

Table

Description automatically generated

Image: Third menu NPV, IRR and PP calculation

## Future Enhancements for the Application:

* **Responsiveness:** Currently the third menu of the program is not responsive to the resizing of the screen. Future improvement will be to use grid() method and place the widgets accordingly to make the screen responsive for user.
* **Result label:** After the result is calculated, the result of the calculation is displayed in a label below the calculate button. I plan to make a specific place holder using entry field for the result.
* **Button Size:** Currently the size of the buttons are not consistent. In some menus the buttons are larger than other menus. In future I plan to have consistency between the sizing of the widgets.
* **Use of Grid() positioning:** Currently on all menus except the third menu I used pack() method for attaching the widgets on the screen. In future I plan to use grid() method to attach the widgets on the screen as it is more versatile and effective.