

INF 154 Assignment 3

Practical #: 3

Topic: Practical Lecture 3

- Reinforce the concept of variables, constants, string manipulation and arithmetic & Flow charts
 - Create a Flow Chart
 - Create a Windows Form Project
 - Edit properties of the various GUI elements
 - Understand the different arithmetic used in C# & the various properties of Form Controls

Practical Name: INF154Prac3xxxxxxxxx (where xxxxxxxxx is your student number)

Due: Monday, 20 March 2023 at 08:30

PART 1 – Flowchart (Only the flowchart)

You will need to create a flow chart to help you decide whether you should buy a new textbook or rather buy a used textbook, depending on the textbook's depreciated value after a year.

Please use digital tools to assist you with creating your flow chart.

Some free useful online tools include:

- Draw.io
- Lucidchart

The Scenario:

"Should I buy a new textbook **OR** a used textbook for my module?"

You need a program to help you decide whether it is better to buy a **new** textbook or rather buy a **used** textbook. To make this decision you will use the resale / depreciated value of the textbook as the deciding factor. The depreciation rate of the textbook will be used to help calculate the resale value of the book after a year. Whichever textbook has a higher resale value after a year is the better choice. The user of your program must enter 5 different values:

| Description: | Variable name: |
|-------------------------------|----------------|
| Cost of new textbook | cstNewBk |
| Cost of used textbook | cstUsedBk |
| Salvage value of new book | salValNew |
| Salvage value of used book | salValUsed |
| Depreciation rate of the book | dprVal |

Depreciated value = Resale value

Depreciation formula:

- New textbook
 Resale value of new book = (cstNewBk salValNew) / dprVal
- Used textbook
 Resale value of used book = (cstUsedBk salValUsed) / dprVal

Hint: You will need to make use of a decision block & two separate values need to be calculated

PART 2 - Code

You will need to code a program to help you save money by creating a dashboard of your Tax-Free Savings. South Africa allows for a R500 000 lifetime limit in Tax-Free savings, with a limit of R36 000 contribution per year. Your dashboard will show all your contributions and key figures.

Step 1: Create "Add" and "Clear" buttons, the "Add" button will add contribution amounts to the listbox. The "Clear" button will clear all the contributions from the listbox.

Please Note: Your "Total" variable needs to be global & be a double data type

Create the following <u>Tax-Free Savings Calculator</u> form with the appropriate controls. TaxFreeCalculator \times Tax Free Savings Calculator Contribution Add **÷** Clear Total Remaining Percentage of limit used so far Lifetime limit R500 000 Annual contribution Years till limit reached R 0 Calculate

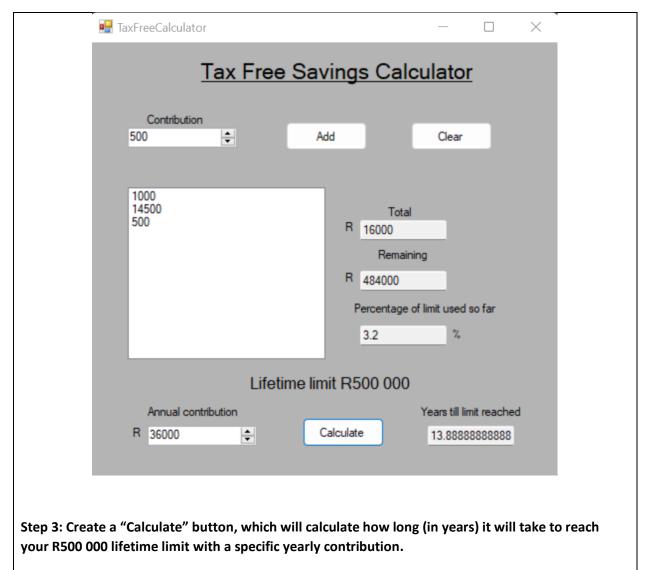
- The "Total" textbox needs to keep a running total of all contributions in the listbox
- The "Remaining" textbox = lifetime limit total contributions
- The "Percentage of limit used so far" = (Total / Lifetime limit) * 100
- The "Years till limit reached" = Lifetime limit / Annual contribution

Step 3: The "Clear" button must totally reset the listbox along with all the READONLY textboxes. So your screen should look like the one above.

Note:

- Your "Contribution" numeric up down for your contribution needs to have a limit if **36 000** and increment of **100**.
- The textboxes need to be read only.

Hint: Reset your Total variable back to 0



Note:

- There needs to be a **constant** lifetime limit variable = 500000.
- The "Annual contribution" numeric up down needs to have a max of 36 000 & increment of 1 000.

Optional Challenge:

Try to round the "Years till limit reached" to a whole number (Hint: use Math.Round())

NOTE: You need to be able to use variables, constants and arithmetic formulas in order for you to achieve these marks. We are not accepting hard-coded values, we need inputs that are processed and displayed as outputs

Marking RUBRIC

| Flow Chart | Mark |
|---|------|
| Correct objects | 3 |
| Arrows show the correct flow from start to finish | 1 |
| All variables & necessary calculations used | 1 |
| | / 5 |
| Program | |
| No errors (The program starts) | 1 |
| Created required form designs (Read only textboxes & numeric up downs have limits and correct step sizes) | 2 |
| When the Add button is clicked, the contributions are added to the listbox and the appropriate textboxes show the updated figures. | 2 |
| When the Clear button is clicked the listbox is cleared and all appropriate textboxes are reset. | 1 |
| The year value, when Calculate is clicked is rounded to a whole number (Zero decimal places) | 1 |
| The correct amounts are displayed in the appropriate textboxes | 2 |
| Sufficient use of comments in your code | 1 |
| Total | / 10 |

Submit your Practical 3c project on ClickUP as follows:

Due Date: 20th March 2023.

Name your project, **INF154Prac3xxxxxxxx** (where xxxxxxxxx is your student number) and compress (zip) your project.

Name your Flow chart file, Prac3FlowChartxxxxxxxxx (where xxxxxxxxx is your student number)

Your Flow chart submission needs to be a pdf, jpg or png file.

Submit it under the Practical 3 submission link.

Note: If you are submitting two separate files, your submission should look as follows.

