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## 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: INF154Prac3xxxxxxxx (where xxxxxxxx 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 =  $(\text{cstNewBk} - \text{salValNew}) / \text{dprVal}$
- Used textbook  
Resale value of used book =  $(\text{cstUsedBk} - \text{salValUsed}) / \text{dprVal}$

**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 Tax-Free Savings Calculator form with the appropriate controls.

The screenshot shows a Windows application window titled "TaxFreeCalculator". Inside the window, the form has a title "Tax Free Savings Calculator" centered at the top. Below the title, there is a "Contribution" section with a numeric up-down control showing "0", an "Add" button, and a "Clear" button. To the left of the "Total", "Remaining", and "Percentage of limit used so far" labels is a large empty listbox. To the right of these labels are three read-only textboxes: "Total" (prefixed with "R"), "Remaining" (prefixed with "R"), and "Percentage of limit used so far" (prefixed with "%"). Below these is the text "Lifetime limit R500 000". At the bottom, there is an "Annual contribution" section with a numeric up-down control showing "0" (prefixed with "R"), a "Calculate" button, and a "Years till limit reached" label followed by an empty read-only textbox.

- 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" =  $(\text{Total} / \text{Lifetime limit}) * 100$
- The "Years till limit reached" =  $\text{Lifetime limit} / \text{Annual contribution}$

**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 of **36 000** and increment of **100**.
- The textboxes need to be read only.

Hint: Reset your **Total** variable back to 0

**Tax Free Savings Calculator**

Contribution: 500 [Add] [Clear]

1000  
14500  
500

Total: R 16000  
Remaining: R 484000  
Percentage of limit used so far: 3.2 %

Lifetime limit R500 000

Annual contribution: R 36000 [Calculate] Years till limit reached: 13.8888888888

**Step 3: Create a “Calculate” button, which will calculate how long (in years) it will take to reach your R500 000 lifetime limit with a specific yearly contribution.**

**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
	<b>/ 5</b>

### 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 <b>Add</b> button is clicked, the contributions are added to the listbox and the appropriate textboxes show the updated figures.	2
When the <b>Clear</b> button is clicked the listbox is cleared and all appropriate textboxes are reset.	1
The year value, when <b>Calculate</b> 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 <b>comments</b> in your code	1
<b>Total</b>	<b>/ 10</b>

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, **Prac3FlowChartxxxxxxxx** (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.

Text Submission

Write Submission

Attach Files

Browse Local Files Browse Content Collection Browse Cloud Service

Attached files

File Name	Link Title	
INF154Prac3xxxxxxxx.zip	INF154Prac3xxxxxxxx.zip	Do not attach
Prac3FlowChartxxxxxxxx.jpg	Prac3FlowChartxxxxxxxx.jpg	Do not attach

ADD COMMENTS

Comments

For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

When finished, make sure to click **Submit**.  
Optionally, click **Save as Draft** to save changes and continue working later, or click **Cancel** to quit without saving changes.  
You are previewing the assignment - your submission will not be saved.

Cancel Save Draft **Submit**