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| College LaSalle |
| Project - Oriented Object Programming User and Technical Manual |
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| Presented to: Mihai Maftei. |

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1. **Start by adding a short description of your project, and the languages (technologies) used:**
2. Language: C#
3. Tools (IDE): Microsoft Visual Studio Community 2022 (64-bit)
4. **Present the print screens of yours forms, and have a detailed description of the functionalities (step by step).**

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| 0 | When the user opens the application, a window with 4 tabs opens.  The first tab (Generated Numbers) is on focus.  There is a button “Exit” on the bottom. |  |
| 1 | When user clicks tab Generated Numbers | Nothing happens, the program stays in the same tab. |
| 1.1 | When user clicks on button Lotto Max, the Window containing the Lotto Max Generator opens.  The user can’t go back to previous window, unless they click Exit and confirm.  This window is all blank. Text box is empty. Label is empty.  There’s an image showing that they are in Lotto Max window. |  |
| 1.1.1 | When user clicks on button Generate, 8 (7+1) UNIQUE numbers show in the text box.  Those number are automatically saved into the file Lotto.txt on folder /files , and the type of the Lotto (Max) is saved too.  Then the program generates 7 unique numbers from 0-9 and prints them in the label below the image. |  |
| 1.1.2 | When the user clicks on the button Read File, a window pops up showing the content of the file that was saved.  The window’s name contains the name of the file.  To close the window, the user must press Ok. |  |
| 1.1.3 | When user clicks on button Exit, a Message Box appears asking the user to confirm that they want to Exit the application.  Options:   * If the user clicks Yes, the Message Box and the Lotto Max Window will close and return to Step 0. * If user clicks No, the Message Box will close and return to Lotto Max window, without changing the previous generated numbers. |  |
| 1.2 | When user clicks on button Lotto 649, the Window containing the Lotto Max Generator opens.  The user can’t go back to previous window, unless they click Exit and confirm.  This window is all blank. Text box is empty. Label is empty.  There’s an image showing that they are in Lotto 649 window. |  |
| 1.2.1 | When user clicks on button Generate, 7 (6+1) UNIQUE numbers show in the text box.  Those number are automatically saved into the file Lotto.txt on folder /files , and the type of the Lotto (649) is saved too.  Then the program generates 7 unique numbers from 0-9 and prints them in the label below the image. |  |
| 1.2.2 | When the user clicks on the button Read File, a window pops up showing the content of the file that was saved.  The window’s name contains the name of the file.  To close the window, the user must press Ok. |  |
| 1.2.3 | When user clicks on button Exit, a Message Box appears asking the user to confirm that they want to Exit the application.  Options:   * If the user clicks Yes, the Message Box and the Lotto 649 Window will close and return to Step 0. * If user clicks No, the Message Box will close and return to Lotto 649 window, without changing the previous generated numbers. |  |
| 2 | When user clicks tab Conversions, a tab containing 2 buttons appear.  Options:   * Money Exchange * Temperature Convert |  |
| 2.1 | When user clicks on Money Exchange, the window Money Exchange pops-up.  The user can’t go back to previous window, unless they click Exit and confirm.  The text box where the user must enter the amount to convert is set to 0.  The other text box, where the converted amount will be printed, is empty.  The first radio button of each column is selected. |  |
| 2.1.1 | When user clicks Convert, the program will calculate and print the value depending on the amount entered on text box and the selected radio buttons.  Every time the user clicks on Convert and the conversion is successful, the program will save the conversion to the file MoneyConv.txt. |  |
| 2.1.1.1 | If user changes the currency TO, the calculated and printed value will be erased (see image above). |  |
| 2.1.1.2 | If user changes the amount to be converted, the calculated and printed value will be erased.  The radio buttons will not change status. |  |
| 2.1.2 | When the user clicks on the button Read File, a window pops up showing the content of the file that was saved.  The window’s name contains the name of the file.  To close the window, the user must press Ok. |  |
| 2.1.3 | When user clicks on button Exit, a Message Box appears asking the user to confirm that they want to Exit the window.  Options:   * If the user clicks Yes, the Message Box and the Money Conversion Window will close and return to Step 2. Before closing, the program shows the amount of time in minutes and seconds that the user remained with the windows MoneyEx opened. * If user clicks No, the Message Box will close and return to Money Conversion window, without changing the previous calculated values. |  |
| 2.2 | When user clicks on Temp Exchange, the window Temperature Conversion pops-up.  The user can’t go back to previous window, unless they click Exit and confirm.  The first radio button is selected.  All text boxes are empty. |  |
| 2.2.1 | When the user selects a radio button, the labels will change, depending on the selected radio button, as follow:   * From C to F: label below text box is C, label below read-only text box is F * From F to C: label below text box is F, label below read-only text box is C |  |
| 2.2.2 | When the user clicks on Convert, the program will convert the value on the text box on the left and write the result in the read-only text box on the right.  If the user inputs an invalid number (like letters, or special characters), the program will alert the user.  Depending on the temperature inserted, the program will display a message in the text box below. |  |
| 2.2.2.1 | If the user changes the radio button after a conversion has been made, the program will erase the calculated conversion and the messages, displaying nothing in the text boxes (Similar to Step 2.2) |  |
| 2.2.3 | When the user clicks on the button Read File, a window pops up showing the content of the file that was saved.  The window’s name contains the name of the file.  To close the window, the user must press Ok. |  |
| 2.2.4 | When the user clicks on the Exit button, a Message Box asks the user to confirm that they want to Exit the window.  Options:   * If the user clicks Yes, the Message Box and the Temperature Conversion Window will close and return to Step 2. * If user clicks No, the Message Box will close and return to Temperature Conversion window, without changing the previous calculated values. |  |
| 3 | When user clicks tab Simple Calculator, a tab containing 1 button appear. |  |
| 3.1 | When user clicks on the only available button, a window named Calculator will pop-up.  This window contains all digits from 0 to 9, a dot (for entering decimal values), the four basic operations (+,-.\*,/), the “=” button, and one Clear and one Exit button.  The window also contains a textbox where the user can see the number they are entering, and another textbox that show the entire Operation.  Textboxes are Read Only. |  |
| 3.1.1 | The user can begin entering the first digit of the first number of the operation.  They can enter as many digits as they want, including decimal characters. The program will verify what is the final number just when they click on an operation.  If the user clicks on an operation before entering a number, then the first number will be considered zero. |  |
| 3.1.2 | When the user clicks on an operation button, the program will save the numerical value that was entered before the operation as the first number of the operation.  The program will clear the Prompt Textbox to zero.  On the other hand, the Operation text box will keep record of the entire operation.  For example, on the figure aside, the user entered 1-5-6 and then pressed +.  The text box kept the record of the number and operation, but the prompt text box is set to zero. | Zoom: |
| 3.1.3 | After clicking on an operation, the user can enter the second value, just like in step 3.1.1  If the user clicks on “=” before entering a value, the program will consider that the second value is 0. |  |
| 3.1.4 | When the user clicks on “=”, the program will perform the operation.  In the prompt box, the final result will be shown. In the operation text box, the entire operation will be shown.  Just when the user clicks on “=”, the program saves the operation on the text file. |  |
| 3.1.5 | Error Messages: |  |
| 3.1.5.1 | If the user clicks on a SECOND operation BEFORE having the final result, the program will show a MessageBox requesting the user to finish the operation or Clear the operation.  In the example aside, the user entered 32+65 and tried to click on the “-” before having the result.  If the user clicks on Clear before clicking on =, the result will not be saved. |  |
| 3.1.5.2 | If the user tries to divide a number by ZERO, the program will give an error message. |  |
| 3.1.6 | A click on Clear will erase the whole operation.  If user has not clicked on = yet, the operation will not be saved. |  |
| 3.1.7 | A click on exit will close the Calculator. |  |
| 4 | When user clicks tab IPv4 Validator |  |
| 4.1 | When user clicks on the only available button, a window named IPv4 Validator will pop-up.  This window contain a label with the current date and an empty text box.  The user can type anything in the text box. |  |
| 4.1.1 | When user click on “Validate IP”, the program will verify if the text on the text box is a valid IP in the IPv4 format.  It will then show a message box with the result, either valid, or invalid.   * If IP is valid, a message affirming this will show. * If the IP is invalid, the program will give a message and explain the accepted format. | OR |
| 4.1.2 | If user clicks Reset, the content on the textbox will be erased. (Similar to Step 4.1) |  |
| 4.1.3 | When the user clicks on the Exit button, a Message Box asks the user to confirm that they want to Exit the window.  Options:   * If the user clicks Yes, the Message Box and the IPv4 validator Window will close and return to Step 4. * If user clicks No, the Message Box will close and return to IPv4 Validator window, without changing the previous inserted/calculated values. |  |
| 5 | When the user clicks on the Exit button on the bottom, the program will confirm that they want to Exit.  Options:   * If the user clicks Yes, the Message Box will close, and so will the entire program. * If user clicks No, the Message Box will close and return to the application on the same previous state. |  |

1. **Present the code of your application (forms).**

## … your code goes here

1. **Present the classes and/or methods that you create or you did use in the project.**

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| **Class/Method Name** | **Description** |
| 1. frmDashboard | This class contains the initial Dashboard with all options. |
| 1. MoneyConv | This class contains the form for Money Conversion. |
| * + 1. Money | This class is for objects Money, containing value and currency. It has an overloaded Constructor. |
| * + 1. ConvertM | This class contains 2 variables of type Money (moneyIn and mooneyOut), its constructors and the methods to calculate the value in the solicited currency (ToCAD, ToUSD, etc). |
| 1. TempConv | This class contains the form for Temperature Conversion. |
| * + 1. Temperature | This class is for Temperatures. It contains the temperature in Celsius and Fahrenheit at the same time. The constructor receives a value and a unit and based on that, converts automatically the temperature to and from units. |
| 1. LottoMax | This class contains the form for Lotto Max. |
| * + 1. Generate Random | This class generates random numbers and array of numbers (used for Lotto Max and Lotto 649) |
| 1. Lotto649 | This class contains the form for Lotto Max. |
| 1. IP4\_Validator | This class contains the form for IPv4 Validator. |
| 1. Calculator | This class contains the form for Calculator. |
| 1. DisplayFile | This class contains the form for displaying the content of a text file. |

1. **Present the difficulties that you have, what was the hardest and the easiest part of your project.**

Until now, no problems.