Project 2 Design Document

Program Requirements

For this project, the user will enter one, single integer that represents a date in the ISO 8601 format. Your input should be in the form YYYYMMDD (no dashes/no spaces/year 1000 or later, maximum year 9999). From the integer in this form, your program will output the date in the format we are familiar with in the United States, MM/DD/YYYY.

Program Inputs

One 8-digit value will be entered. It will be a date in the ISO 8601 format (YYYYMMDD). This value will be stored into an integer variable then converted into three separate integer values for the month, day, and year.

Program Outputs

The program will convert the original value into three separate integer values, then output them in MM/DD/YYYY format.

Test Plan

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| --- | --- |
| Sample Input | Sample Output |
| 20191216 | 12/16/2019 |
| 17010301 | 3/1/1701 |
| 20020226 | 2/26/2002 |
| 19970628 | 6/28/1997 |
| 200102628 | Invalid Length |
| 022199 | Invalid Length |
| 20001328 | Invalid Month |
| 19700004 | Invalid Month |
| 19420431 | Invalid Day |
| 16880748 | Invalid Day |

Solution Overview

To begin, the day, month, year, starting integer value, and leap year will be assigned to integer variables. After assigning values and asking the user to input the 8-digit date, I will use the modulus operator followed by division to assign the two final digits to the day and month variables. I will also use if statements to determine whether the month or date is invalid. Next, I will assign the remaining value of the original input to the year value. I will then use an if statement to determine whether the length of the original input is invalid based on the value of the year variable. Following this, I will utilize an if statement along with relational operators to determine whether the year is a leap year and, if true, assign the value of the year variable to the leap year variable. A series of if statements will then be used to determine month-specific invalid days. If the original input has still not been found invalid, the month, day, and year will be output in MM/DD/YYYY format.

Algorithm Flowchart

Diagram

Description automatically generated