**Project 3 Design Document**

**Program Requirements**

For this project, the user will enter one, single integer that represents a date inthe 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. In your output, you may also omit leading 0’s (example for February 15, 2019, you may represent it as 2/15/2019, instead of 02/15/2019).

**Program Inputs**

* Date
  + **date**
  + integer value
* Year
  + **year**
  + integer value
* Month
  + **month**
  + integer value
* Day
  + **day**
  + integer value

**Program Outputs**

* Converted date
  + cout << month << “/” << day << “/” << year << endl;
* Invalid Length
  + Cout << “Invalid Length” << endl;
* Invalid Month
  + Cout << “Invalid Month” << endl;
* Invalid Day
  + Cout << “Invalid Day” << endl;

**Test Plan**

* Test for validity of program
  + Input: 20211225
  + Expected output: **12/25/2021**
  + Input: 20210607
  + Expected output: **6/7/2021**
* Test to see if all numbers are arranged correctly
  + Input: 20210608
  + Expected output: **6/8/2021**
  + Input: 20210922
  + Expected Output: **9/22/2021**
* Test to see if all 0s are omitted from the output
  + Input: 20210608
  + Expected output: **6/8/2021**
  + Input: 20211207
  + Expected output: **12/7/2021**
* Test for valid or invalid length
  + Input: 2021062
  + Expected output: **Invalid Length**
  + Input: 02364585
  + Expected output: **Invalid Length**
* Test for valid or invalid month
  + Input: 20211306
  + Expected output: **Invalid Month**
  + Input:20210006
  + Expected output: **Invalid Month**
* Test for valid or invalid day
  + Input: 20210632
  + Expected output: **Invalid Day**
  + Input: 20210600
  + Expected output: **Invalid Day**

**Solution Overview**

Start by defining all needed libraries, in this case it will be “<iostream>” . You will then use the “std” namespace to save time on using input and output functions. Then, you will prompt the user to input an 8 digit date value in the form of the ISO 8601 format. You will then accept an input for this value “int date”. After this, you will create calculations in order to isolate all of the numbers for year, month, and day correctly. You will do this with the following calculations in order: year = date/10000; date = date%10000; month=date/100; date=date%100; day = date/1. After this, you will create a control statement system to test if all inputs are valid. You will do this by testing for valid length, a valid month, and a valid day. If any of these requirements are violated, you will output that there is an error specifying where the error is (ex: invalid length, invalid day, invalid month). If all of the input is valid, you will then output the date in the format MM/DD/YYYY.

**Algorithm Flowchart**

