

CS3300 HW Assignment 4

Question 1: Exceptions (15 points)

Write a program that converts dates from numerical “month/day/year” format to normal “month day, year” format (for example, 12/25/2000 corresponds to December 25, 2000).

You will define three exception classes, one called `MonthException`, another called `DayException`, and a third called `YearException`.

If the user enters anything other than a legal month number (integers from 1 to 12), your program will throw and catch a `MonthException` and ask the user to reenter the month.

Similarly, if the user enters anything other than a valid day number (integers from 1 to either 28, 29, 30, or 31, depending on the month and year), then your program will throw and catch a `DayException` and ask the user to reenter the day.

If the user enters a year that is not in the range 1000 to 3000 (inclusive), then your program will throw and catch a `YearException` and ask the user to reenter the year. (There is nothing very special about the numbers 1000 and 3000 other than giving a good range of likely dates.) Use the following rule for determining if the year is a leap year: A year is a leap year if it is divisible by 4 but is not divisible by 100, or if it is divisible by 400.

Question 2: Exceptions and Swing (15 points)

Design a Swing GUI formula calculator. Your program will prompt the user to enter a non-negative number. If the user enters a negative number or a nondigit number, throw and handle an appropriate exception and prompt the user to re-enter another number. Your calculator has a button labeled “display result”; if it is clicked the system will display the result of calculation based on the following formula.

$$result = \frac{-x + \sqrt{|x^2 - 4x + 2|}}{2}$$