(10 points)

> ### The Date Class
> ### Phase 2

Write a C++ program to include the following additional member functions in your Date class from the previous computer assignment:

- Date (const Date& d): **This is a** public **copy constructor that can be used to create a new** Date **object from the copy of the** Date **object** d.

- Date& operator= (const Date& d): **This is a** public **assignment operator that overwrites an existing** Date **object with the copy of the** Date **object** d.

- Date& addDay (const int& n): **This** public **function can be used to add** n **number of days to a** Date **object.**

- Date& addMonth (const int& n): **This** public **function can be used to add** n **number of months to a** Date **object. If the day of the resulting month is larger than the number of days in that month, then choose the following month with** day = 1.

- Date& addYear (const int& n): **This** public **function can be used to add** n **number of years to a** Date **object.**

- int dayIndex ( ) const: **This public function returns an index value for a** Date **object, which is simply equal to the number of days passed from the reference date of** January 1, 1 **with the index value** 1. **This implies that the index values for days after this date have positive values and the index values for days before this date have negative values. For example, the index value for** January 2, 1 **is** 2 **and the index value for** December 31, −1 **is** −1 **because there is no year** 0.

- int monthIndex ( ): **This** private **function returns the index value of a month from the** months **vector, which is between** 0 **and** 11, **and the returned index value can be used to get the month of a** Date **object.**

You also need to have the non-member function: unsigned dateDiff (const Date& d1, const Date& d2) **to get the number of days between the** Date d1 **and** Date d2. **Remember that the difference between the years** −1 **and** 1 **is** 1 **not** 2. **When you move from a date with a positive index value to a year with a negative index value or vice versa, you need to consider this fact in your computation.**

A driver program is supplied to test your Date **class. The source file of the driver program is** prog7.cc. **To use this source file with your** Date **class, make a link from your program directory. To compile the source files** prog7.cc **and** Date.cc **and link their object files with the system library routines, first make a link to the script** Make **in directory:** ~cs689/bin, **and then execute:** Make N=7. **To test your program, execute:** Make execute N=7. **The source**

file prog7.cc **is in directory:** ~cs689/progs/16f/p7. **The correct output file** prog7.out **is also in the same directory.**

The main ( ) **routine tests the member functions of the** Date **class for several given dates. For each** Date **object** d, **it calls the non–member function** bool printDate (const Date& d), **This routine checks if** d **is a valid date, and if it's not, it prints an error message on** stderr **and it returns** false; **otherwise, it prints** d **on** stdout **and it returns** true.

When your program is ready, mail its source and header files of your Date **class to your TA by executing:** mail_prog Date.cc Date.h.