# (a) Define a class ***counter***, which has three data members: ***count*** (of type int) that represents the value of the counter, ***overflow*** (of type bool) that is set to *true* if an overflow occurs, and ***maxcnt*** (of type int) that represents the maximum value of the counter. It has a constructor ***counter(int max\_count)***, that creates a counter with a given maximum count and an initial value 0, and sets *overflow* to *false*, and it has 4 member functions: ***increment()***, which increases the current count by 1; if the current count equals the maximum count, the *count* is set to zero, and *overflow* to true; ***reset()***,which sets the counter to zero and overflow to false; ***get\_count()***, which returns the current count, and ***check\_for\_overflow()***, which returns true if an overflow has occurred and false if it has not.

(b) Using class ***counter***, write a main program that reads a sentence, and counts the frequency of each vowel (a, e, i, o, u) in it, then displays these frequencies. The program should use a separate counter for each vowel, and it should display an error message if any of the counters overflows.

1. Declare and implement a class ***Date*** that has 3 **int** data members: day, month and year, and has a no-argument **constructor** that creates a ***Date*** object and initializes its data members to zeros, a 3-argument **constructor** that creates a ***Date*** object and initializes its data members to given values, and two member functions: ***get\_date()*** that reads from the keyboard the data of a ***date*** object in the form dd/mm/yy, and ***show\_date()*** that displays a ***date*** object in the form dd/mm/yy, and a **compare()** that compares two date objects and returns true if the first date is less than the second one, and false otherwise. .
2. write a main program that creates a ***date*** object and initializes it with today’s date, and creates another ***date*** object and reads its data from the keyboard, then compares these two dates and displays them with a message indicating the result of the comparison.