MORE PRACTICE WITH SELECTION

CS 121

Write programs to solve the following three problems. Your solutions are due at the beginning of class on Friday (Feb. 26). For each solution, paste your code and a screenshot of your program's output in a document. Upload your document (preferably in PDF format) to Moodle as HW7.

1. Write a program that asks the user for a string of lowercase letters and uses the `is_vowel()` function from class to determine whether the string consists entirely of vowels.

   Hint: Use the `len()` function to determine how many characters are in the string. Use square brackets after the name of the string to access a particular character from the string, as demonstrated here:

   ```
   str = "duluth"
   print(str[0])    #prints d
   print(str[1])    #prints u
   print(str[5])    #prints h
   ```

2. Write a program that asks the user for a month and a year, and then prints the number of days in that month. Correctly account for leap years.

   Hint: Recall that a year is a leap year if it is divisible by 4, but not divisible by 100, unless it is also divisible by 400.

3. Write a program that computes the day of the week for any date, past or present. First, use three separate input statements to ask the user for a year, a month, and a day. Let these values be stores in the variables `year`, `month`, and `day`. Then compute the following two values:

   ```
   century_item = 2*(3 - ((year // 100) % 4)) + 1
   year_item = (year % 100) + (year % 100) // 4
   ```

   Define another variable, called `month_item`, to have the following value determined by the month:

   `month_item` is 0 if the month is January or October
   `month_item` is 1 if the month is May
   `month_item` is 2 if the month is August
   `month_item` is 3 if the month is February, March, or November
   `month_item` is 4 if the month is June
   `month_item` is 5 if the month is September or December
   `month_item` is 6 if the month is April or July

   Let `total` be the sum `century_item + year_item + month_item + day`.

   If the date is in January or February of a leap year, then subtract 1 from `total`.

   Finally, `total % 7` indicates the day of week: 0 indicates Saturday, 1 indicates Sunday, 2 indicates Monday, and so on.

   Here are some dates to test your program:

   - January 30, 1984 was a Monday.
   - June 19, 2007 was a Tuesday.
   - November 4, 2054 will be a Wednesday.