YILDIZ TECHNICAL UNIVERSITY
MECHATRONICS ENGINEERING

MKT1142 – Computer Programming and Algorithms

Spring 2022

Exercise Questions

- **These are the practical coding exercises to examine yourself before the 1st Midterm Exam that will be held at 2nd of April 2022.**

1) Write a C++ program that computes the total and average of five numbers between 10 and 100, which should be obtained from the user.
2) Ask 3 users to enter their names-surnames and find the length of each entry by also checking if any numbers are entered mistakenly.
3) Write a program that converts Celsius to Fahrenheit.
4) A professor generates letter grades using the Table below:

GRADE VALUES	
% Correct	Grade
0-60	F
61-70	D
71-80	C
81-90	B
91-100	A

Given a numeric grade, print the letter.

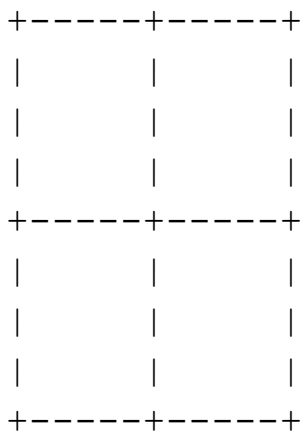
5) Modify the previous program to print out a + or - after the letter grade based on the last digit of the score. The modifiers are listed in Table below:

Last Digit	Modifier
1-3	-
4-7	<blank>
8-0	+

For example, 81=B-, 94=A, and 68=D+. Note: An F is only an F. There is no F+ or F-.

6) A leap year is any year divisible by 4 unless it is divisible by 100, but not 400. Write a program to tell whether a year is a leap year.

7) Print a checkerboard (8-by-8 grid). Each square should be 5-by-3 characters wide. A 2-by-2 example follows:



8) Write a program to average n numbers.
9) Write a program to print out the multiplication table
10) Write a program that reads a character and prints out whether it is a vowel or a consonant.
11) Write a program that converts numbers to words. Example: 895 results in ''eight nine five."
12) The total resistance of n resistors in parallel is:

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \ \ldots \ + \frac{1}{R_n}$$

Suppose we have a network of two resistors with the values 400Ω and 200Ω. Then our equation would be

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} = \frac{1}{400} + \frac{1}{200}$$

Write a program to compute the total resistance for any number of parallel resistors.

13) Write a program calculating the Fibonacci numbers for the user entered n number of elements.
14) Write a program to tell whether a number is prime.