

# CENG 2001 – C Programming - Fall 2020

## Take Home Midterm Exam

3 Questions (100 pts total)

**Deadline: 14/12/2020 13:00**

### Submission Rules:

- Write all your solutions as handwritten on to a set of A4 papers.
- Write “CENG 2001 – C Programming – Fall 2020 – Take Home Midterm Exam” at the beginning of your answer sheet
- Write your name, student id and signature at each page!
- Scan your handwritten answers by a scanner or a camera
- Convert them to a single PDF file

1. **(30 Pts)** Write a program that lists prime numbers that a given number is divisible by. The number is get by the user as input.

Examples:

Input: 15, Output: 3,5

Input: 12, Output: 2,3

Input: 32, Output: 2

Input: 17, Output: 17

Input: 780, Output: 2,3,5,13

Hints:

1. Prime number is a positive number that is divisible by only 1 and itself. (e.g., 2, 3, 17,19).
4. Assume that there will be at most 20 prime numbers to list in the output.

2. **(50 Pts)** Write a **function** to check if a Turkish Identity number is valid or not. There are a few mechanisms to check if the identity number is valid.

- a. It has 11 digits
- b. It does not start with 0
- c. Remainder of the sum of first 10 digits after dividing by 10 gives the 11. digit
- d. (There is another rule, but you can ignore it for now)

The function will take a string as argument and will return 1 if it is valid and 0 if it is invalid. It has to check all three rules (a,b,c) and must return 1 only it satisfies all three rules.

Example: Turkish Identity Number of Mustafa Kemal Atatürk

**10000000146**

- It has 11 digits ✓
- It does not start with 0 ✓
- $(1 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 1 + 4) \% 10 = 6$  and it is equal to 11. Digit ✓

The function returns 1

Do not write the main program. Create a function only but with proper function definition, return values.

Name:

Signature:

3. **(20 Pts)** Write a program that takes a string from the user as input and finds the number of occurrences of “the” in the string. It displays the number of occurrences as output.

Example: The most interesting words that include the are therapeutically, openmouthed, theory, etherealization, mathematical.

Output: 7