BLM1011 Introduction to Computer Science Assignment - I

Due 08/11/2020 - 23:59

Instructor: Assist. Prof. M. Amaç GÜVENSAN

Question 1: Suppose a digital camera has a storage capac- ity of 500MB. How many black-and-white pho- tographs could be stored in the camera if each consisted of 512 pixels per row and 512 pixels per column if each pixel required one bit of storage? **(6 Points)**

Question 2: What bit patterns are represented by the following hexadecimal notations?

a. 8A9

b. DCB

c. A01

d. C99 (8 Points)

Question 3: What is the value of the least significant bit in the bit patterns represented by the following hexadecimal notations?

a. 9A

b. 90

c. 1B

d. 6E (8 Points)

Question 4: Convert each of the following base 10 representations to its equivalent excess sixteen representation:

a.-12

 $\mathbf{b.0}$

c.10

d. -8 (8 Points)

<u>Algorithm 1:</u> **Design an algorithm** which converts the given zeros and ones into a fractional number (use base 10 representation) using the given point position? (**70 Points**)

Input (should be given by the user):

 \boldsymbol{N} : the number of elements of the given array

Array: consists of zeros and ones **Point**: the position of the point

Example 1:

N=6

Array= 1 1 1 0 1 0

Point = 3

Hint = 111.010

Answer: 7.25

Example 2:

N=5

Array= 1 0 0 1 1

Point = 2 Hint : 10.011 **Answer: 2.675**

Example 3:

N=4

Array= 1 1 0 0

Point = 1 Hint : 1.100 **Answer: 1.5**

Example 4:

N=3

Array= 0 1 0

Point = 2 Hint : 01.0 **Answer: 1**

SUBMISSION

- 1. Assignments submitted after submission deadline will not be evaluated.
- 2. Collaboration on any assignment is strictly prohibited. Submitted assignments are automatically checked for similarities. Infractions will be given a zero for the entire assignment.
- 3. Assignments MUST be submitted via online.yildiz.edu.tr
- 4. You should submit your PDF file with the name of your studendid as given below.

Example File Name: 18011001.pdf

Content

^{*} Negative numbers could not be represented in this algorithm.

An PDF file which contains

- a. Answer should include detailed solution steps for question 1,2,3,4
- b. Flowchart Flowchart for Algorithm 1. (You can draw your flowchart either by your hand or by computer. Just work clean !!!)
- d. Analysis should be done for Algorithm 1 for each possible different cases

Do not forget to prepare a cover page which should include

- Course Name
- Course Group
- Instructor Name
- Assignment Number
- Delivery Date of the Assignment
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<u>ATTENTION</u>

• Assignments that don't comply with submission rules will NOT be evaluated. "NO EXCEPTION"