06.12.2020

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 b.0 c.10 d. -8 (8 Points)

Algorithm 1: **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) :
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

*** Negative numbers could not be represented in this algorithm.**

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

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
- Student Id
- Student Name and Surname
- Signature

ATTENTION

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