Unit 3 - Week 1

Assignment 1

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-08-14, 23:59 IST.

You are asked to perform edge detection on a Full-HD video stream: 1920x1080 pixels at 60 frames per second, 32 bits per pixel.

1) What is the data rate (B/s) at which you are getting data into the system?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 497664000

1 point

2) You are performing edge detection by convolving a 3x3 filter to the pixels: each weight in the filter is a floating point number, and each pixel (32 bit) consists of 4 colours (RGB and alpha) that can be converted to floating point before computation. How many floating point multiply operations will you require per second?
Assume each colour has to be convoled separately and thE output image size is kept the same as input by padding the border pixels if needed .

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 4478976000

1 point

For each question below, select True (T) or False (F). Assume all other operating conditions are un- changed

3) Higher operating voltage will make a circuit operate more slowly.

1 point

○ True
○ False

No, the answer is incorrect.
Score: 0
Accepted Answers:
False

4) Higher operating voltage will make a circuit consume more power

1 point

○ True
○ False

No, the answer is incorrect.
Score: 0
Accepted Answers:
True

5) A larger gate will have a lower input capacitance than a smaller one.

1 point

○ True
○ False

No, the answer is incorrect.
Score: 0
Accepted Answers:
False

6) If we want to represent numbers having a dynamic range of 10^4 using two's complement binary numbers, the minimum number of bits required is

1 point

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 15

A system designer finds several design solutions to a problem, and has 3 cost metrics: (area, latency, power). For all metrics, lower values are better. From the solutions given here, identify which are the Pareto optimal solutions, and briefly explain why the others are not. Solutions –
$A : (10, 20, 50), B : (20, 20, 50), C : (12, 25, 60), D : (8, 25, 30), E : (20, 15, 40), F : (30, 15, 50)$

7) Mark all the **Pareto Optimal** solutions here

0 points

☐ A
☐ B
☐ C
☐ D
☐ E
☐ F

No, the answer is incorrect.
Score: 0
Accepted Answers:
A
D
E
F

8) Mark all the solutions that are dominated by solution **A**

1 point

☐ B
☐ C
☐ D
☐ E
☐ F

No, the answer is incorrect.
Score: 0
Accepted Answers:
B
C

9) Mark all the solutions that dominate solution **B**

1 point

☐ A
☐ C
☐ D
☐ E
☐ F

No, the answer is incorrect.
Score: 0
Accepted Answers:
A
E

10) If only latency and power are considered important metrics, mark all the **Pareto Optimal** solutions here

1 point

☐ A
☐ B
☐ C
☐ D
☐ E
☐ F

No, the answer is incorrect.
Score: 0
Accepted Answers:
D
E