Part 1: ORA (15 Marks)

Question 1(Marks : 8)

You are given the following information:

- array A stores single-precision floating-point values,

- array B stores double-precision floating-point values and

- array C stores integer values.

- The base addresses of arrays A, B and C are in $s0, $s1 and $s2 respectively, D is in $s3 and i in $s4.

Write the MIPS code for the following lines of code making optimum utilization of registers.

```
for (int i = 0; i<3; i++)
{
    C[i] = A[i] - B[i] + D
}
```

Question 2 (Marks : 7)

Question

Consider your valid BU student ID as a hexadecimal value. Now using single precision IEEE-754 floating-point representation, convert the hexadecimal value into equivalent decimal representation.
You must show all the steps.

For example, if your ID is 12144324, then you have to consider 12144324 as a hexadecimal number, represented using IEEE-754 floating-point format. Your task is to convert that into its decimal floating-point form.

OPEN RESPONSE ASSESSMENT

Status

You have completed this assignment. Your final grade will be available when the assessments of your response are complete.

▼ | Your Response due Nov 21, 2021 21:00 +06 (in 0 minutes) ✔ COMPLETE

Your response has been submitted. You will receive your grade after all steps are complete and your response is fully assessed.

The question for this section

> Write down the answers to Questions 1 and 2. You must specify which question you are answering.

Your response

```
1. add $s4, $zero,$zero
Loop:
slti $t0,$s4,3
beq $to, $zero,Exit
sll $t0,$s4,2 # i*4
add $t1, $t0,$s0
lwc1 $f0,0($t1) # f0=a[i]
add $t2, $t0,$s0 #$t2=address of b[i]
ldc1 $f1,0($t2)
cvt.d.s $f3,$f1
sub.s $f4,$f0,$f3 #sub a[i] -b[i]
mtc1 $s3, $f5
cvt.s.w $f5, $f5
add.s $f6,$f4,$f5
cvt.w.s $f6,$f6
mfc1 $t1,$f6
add $t2,$t0,$s2 # actual address of c array
sw $t1,0($t2)
addi $s4,$s4,1
j Loop
Exit:
```

2.
My id= 0x19101498
Convert it into Binary

0001 1001 0001 0000 0001 0100 1001 1000

write the binary number as format(signbit biasedExponent fraction)
0 00110010 00100000001010010011000

convert the biased exponent to normal exponent and find fraction
biased exponent= 00110010=50
bias = $2^{(n-1)}-1$ = 127

original exponent= 50- 127 = -77

fraction= 0.00100000001010010011000

convert the fraction to decimal and Put exponent and fraction in the decimal form

Decimal form of fracton=1053848

Decimal Value= (-1)^sign * (1.fraction) * 2^exponent
= 1.1053848 * 2^-77

now convert the base 2 to 10 using calculator
7.314823008*10^-24

| Staff Grade   NOT AVAILABLE

Waiting for a Staff Grade

Check back later to see if a course staff member has assessed your response. You will receive your grade after the assessment is complete.

▾ Your Grade: Waiting for Assessments

You have completed your steps in the assignment, but some assessments still need to be done on your response. When the assessments of your response are complete, you will see feedback from everyone who assessed your response, and you will receive your final grade.