CS 321- Quiz 1

Total points 61/100

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Assume variables x, f, and d are of type int, float, and double, respectively.Their values are arbitrary, except that neither f nor d equals +∞, −∞, or NaN. For the following C expression, check whether it will always be true: d == (double)(float) d 2/2

- ○ Always True
- ◉ Not Always
- ○ Other:

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Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The representation for 5/8 is (give answer in binary eg: 11000001) 3/3

00110010

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The write the binary value of 2.25 is (give binary without space eg. 1 1000001) 2/2

01000001

QXX1: 32-bit unsigned number representation of 478 is 2/2

00000000000000000000000111011110

QXX3: 32-bit signed number representation of -478 is ···/2

10000000000000000000000111011110

Suppose we have a 6-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 3 exponent bits, and 2 fraction bits. Total number useful representation is (give answer as integer eg. 64) ···/3

64

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The representation for -1.01 is (give answer in decimal: X.XX) ···/3

10111000

Assume variables x, f, and d are of type int, float, and double, respectively.Their values are arbitrary, except that neither f nor d equals +∞, −∞, or NaN. For the following C expression, check whether it will always be true: x == (int)(float) x 2/2

- ○ Always True
- ◉ Not Always
- ○ Other: _____

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The write the binary value of Smallest positive normalized number is (give binary without space eg. 1 1000001) 2/2

00001000

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The representation for 12.25 is (give answer in decimal: X.XX) ···/3

01010100

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The representation for the sum of sum (2.01 +2.00) is (give answer in binary eg: 11000001) ···/3

01001000

Assume variables x, f, and d are of type int, float, and double, respectively.Their values are arbitrary, except that neither f nor d equals +∞, −∞, or NaN. For the following C expression, check whether it will always be true: x == (int)(double) x 0/2

- ○ Always True
- ◉ Not Always
- ○ Other: _____

Q8 Nine_ints are 9-bit signed two's complement integers. Nine_floats are 9-bit floating point numbers with 4 bits for the exponent, 4 bits for the fraction, and 1 bit for the sign. Nine_floats are similar to IEEE floating point as far as layout of sign, exponent and fraction and represent special values (e.g. 0, pos and neg infinity, NAN) similar to how they are represented in 32 bit IEEE floating point. 2/2

8. It is possible to lose precision when converting from Nine_ints to Nine_floats.

- ◉ TRUE
- ○ FALSE

Assume variables x, f, and d are of type int, float, and double, respectively. Their values are arbitrary, except that neither f nor d equals +∞, −∞, or NaN. For the following C expression, check whether it will always be true: d*d >= 0.0 0/1

- ○ Always True
- ◉ Not Always
- ○ Other: _____

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The value of Largest positive De- normalized number is (give answer in binary eg:11000001) ⋯/3

00000001

Assume variables x, f, and d are of type int, float, and double, respectively.Their values are arbitrary, except that neither f nor d equals +∞, −∞, or NaN. For the following C expression, check whether it will always be true: f == (float)(double) f 0/2

- ○ Always True
- ◉ Not Always
- ○ Other:

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The write value of Largest positive normalized number < ∞ (give answer in Decimal eg: 14) 2/2

240

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The write the binary value of -80 is (give binary without space eg. 1 1000001) 2/2

11101010

Q6 3/3

6. In IEEE 754 standard the number 0x415e0000 (hex) is equivalent to

- ○ 15.875
- ○ 15.75
- ◉ 13.875
- ○ 1.875

Q2 0/2

In a hypothetical 10 bit processor uses 10 bit Floating point representation and assumes the following format

1bit sign	4 bit Exponent	5 bit Mantissa

2. The minimum Normalized number that can be represented in the system is?

Choice:

- ○ 0.015625
- ◉ 0.03125
- ○ 0.0625
- ○ non of these

Q7 Nine_ints are 9-bit signed two's complement integers. Nine_floats are 9-bit floating point numbers with 4 bits for the exponent, 4 bits for the fraction, and 1 bit for the sign. Nine_floats are similar to IEEE floating point as far as layout of sign, exponent and fraction and represent special values (e.g. 0, pos and neg infinity, NAN) similar to how they are represented in 32 bit IEEE floating point. 0/3

7. The largest positive number we can represent with Nine_ints?

- ○ 255
- ◉ 511
- ○ 256
- ○ none of these

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The value of Smallest positive De- normalized number is (give answer in Decimal eg: 0.0003125) 2/2

0.001953125

Q9 Nine_ints are 9-bit signed two's complement integers. Nine_floats are 9-bit floating point numbers with 4 bits for the exponent, 4 bits for the fraction, and 1 bit for the sign. Nine_floats are similar to IEEE floating point as far as layout of sign, exponent and fraction and represent special values (e.g. 0, pos and neg infinity, NAN) similar to how they are represented in 32 bit IEEE floating point. 3/3

9. It is possible to lose precision when converting from Nine_floats to Nine_ints.

- (●) TRUE
- ( ) FALSE

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The value of Largest positive De- normalized number is (give answer in Decimal eg: 0.0003125) 2/2

0.013671875

Q5 2/2

5. In IEEE 754 standard the number 0.1 (Decimal) is represented as

- (●) 0x3dcccccd
- ( ) 0x3e4ccccd
- ( ) 0x3e19999a
- ( ) 0x3e1eb852

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The write the binary value of 2.25 is (give binary without space eg. 1 1000001) 2/2

01000001

Q10 Nine_ints are 9-bit signed two's complement integers. Nine_floats are 9-bit floating point numbers with 4 bits for the exponent, 4 bits for the fraction, and 1 bit for the sign. Nine_floats are similar to IEEE floating point as far as layout of sign, exponent and fraction and represent special values (e.g. 0, pos and neg infinity, NAN) similar to how they are represented in 32 bit IEEE floating point. ···/3

10. The smallest negative number representable as a Nine_int < The smallest negative number representable as a Nine_float.

- (●) TRUE
- ( ) FALSE

Assume variables x, f, and d are of type int, float, and double, respectively. Their values are arbitrary, except that neither f nor d equals +∞, −∞, or NaN. For the following C expression, check whether it will always be true: (f+d)-f == d 2/2

- ( ) Always True
- (●) Not Always
- ( ) Other:

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The value of Smallest positive normalized number is (give answer in Decimal eg: 0.03125) ···/2

00001000

Assume variables x, f, and d are of type int, float, and double, respectively. Their values are arbitrary, except that neither f nor d equals +∞, −∞, or NaN. For the following C expression, check whether it will always be true: f == -(-f) 0/2

- ○ Always True
- ◉ Not Always
- ○ Other:

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The representation for 5/8 is (give answer in decimal: -X.XX) 3/3

00110010

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The write the binary value of largest positive normalized number < ∞ is (give binary without space eg. 1 1000001) 2/2

01110111

QXX1: 32-bit sign magnitude representation of -478 is 2/2

10000000000000000000000111011110

output is 4/4

-126

QXX1

In C, type char is a signed, 8-bit integer. With that in mind, what does this output?

```
char a = 100;
char b= 30;
char c= a + b;
printf( "%d\n", c); //
```

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The representation for 12.25 is (give answer in binary eg: 11000001) 3/3

01010100

Q3 2/2

In a hypothetical 10 bit processor uses 10 bit Floating point representation and assumes the following format

1bit sign	4 bit Exponent	5 bit Mantissa

3. The maximum De-normalized number that can be represented in the system is?

- 0.015625
- (●) 0.01513671875
- 0.0146484375
- non of these

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The write the binary value of 1/32 is (give binary without space eg. 1 1000001) 2/2

00010000

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The representation for the sum of sum (2.01 +2.00) is (give answer in decimal: -X.XX) ···/3

4.00

QXX2 32-bit signed number representation of 478 is ···/2

10000000000000000000000111011110

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The representation for -1.01 is (give answer in binary eg:11000001) 3/3

10111000

Suppose we have a 8-bit computer that uses IEEE floating-point arithmetic where a floating point number has 1 sign bit, 4 exponent bits, and 3 fraction bits. The value of Smallest positive De-normalized number is (give answer in binary eg:11000001) 3/3

00000001

Q4 2/2

In a hypothetical 10 bit processor uses 10 bit Floating point representation and assumes the following format

1bit sign	4 bit Exponent	5 bit Mantissa

4. The minimum De-normalized number that can be represented in the system is?

- (●) 0.00048828125
- ( ) 0.0009765625
- ( ) 0.001953125
- ( ) None of these

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