

This print-out should have 26 questions, check that it is complete. Multiple-choice questions may continue on the next column or page: find all choices before making your selection. The due time is Central time.

EE319K Chapter 2 homework

001 (part 1 of 1) 10 points

A software variable can take on whole number values from -200 to +200. Which number format should be used for this variable?

1. 8-bit signed integer
2. 32-bit floating point
3. 16-bit signed fixed-point number with a resolution of 0.01
4. none of these choices is correct
5. 32-bit signed integer
6. 16-bit signed integer
7. 16-bit signed fixed-point number with a resolution of 0.001

002 (part 1 of 1) 10 points

A software variable can take on whole number values from -100000 to +100000. Which number format should be used for this variable? If more than one format could be used to solve the problem, choose the best format.

1. none of these choices is correct
2. 16-bit signed fixed-point number with resolution of 0.01
3. 16-bit signed integer
4. 32-bit floating point
5. 8-bit signed integer
6. 32-bit signed integer
7. 32-bit signed fixed-point number with res-

olution of 0.001

003 (part 1 of 1) 10 points

A software variable can take on whole number values -99.99, -99.98, -99.97,..., +99.97, +99.98, +99.99. Which number format should be used for this variable? If more than one format could be used to solve the problem, choose the best format.

1. none of these choices is correct
2. 16-bit signed fixed-point number with resolution of 0.001
3. 8-bit signed integer
4. 16-bit signed fixed-point number with resolution of 0.01
5. 32-bit signed integer
6. 16-bit signed integer
7. 32-bit floating point

004 (part 1 of 1) 10 points

A software variable can take on whole number values 0.0, 0.1, 0.2,..., 9.7, 9.8, 9.9. Which number format should be used for this variable? If more than one format could be used to solve the problem, choose the best format.

1. 16-bit unsigned fixed-point number with resolution of 0.1
2. 16-bit unsigned fixed-point number with resolution of 0.01
3. 16-bit unsigned integer
4. 8-bit unsigned fixed-point number with resolution of 0.1
5. 32-bit unsigned integer
6. none of these choices is correct

7. 8-bit unsigned integer

8. 32-bit floating point

005 (part 1 of 1) 0 points

Using the estimation that 2^{10} is approximately equal to 10^3 , without using a calculator, estimate the approximate value of 2^{32} . Do not give the exact value, but rather give the answer with one significant decimal digit. For example, 2^{11} is approximately equal to 2000.

006 (part 1 of 1) 10 points

Assuming an 8-bit unsigned integer format, what is the decimal value of hexadecimal $0xA5$?

007 (part 1 of 1) 10 points

Assuming an 8-bit unsigned integer format, what is the decimal value of hexadecimal $0xE5$?

008 (part 1 of 1) 10 points

Assuming an 8-bit signed integer format, what is the decimal value of hexadecimal $\$A2$?

009 (part 1 of 1) 10 points

Assuming a 16-bit unsigned integer format, what is the decimal value of hexadecimal $\$6DB2$?

010 (part 1 of 1) 10 points

Assuming a 16-bit unsigned integer format, what is the decimal value of hexadecimal $\$D62B$?

011 (part 1 of 1) 10 points

Assuming a 16-bit signed integer format, what is the decimal value of hexadecimal $\$8CF9$?

012 (part 1 of 1) 10 points

How many binary bits are required to represent the number **70000**. For example, it takes 11 bits to represent the number 2000.

013 (part 1 of 1) 10 points

How many 8-bit bytes of storage are required to represent the number **70000**. For example, it takes 2 bytes to represent the number 2000.

014 (part 1 of 5) 5 points

Consider the result of executing the following two 6811/6812 assembly instructions.

```
ldaa #71
adda #112
```

What is the value in Register A after these two instructions are executed? Give your answer in **unsigned decimal**.

015 (part 2 of 5) 5 points

What will be the value of the carry (C) bit? Give your answer as 0 or 1.

016 (part 3 of 5) 5 points

What will be the value of the overflow (V) bit? Give your answer as 0 or 1.

017 (part 4 of 5) 5 points

What will be the value of the zero (Z) bit? Give your answer as 0 or 1.

018 (part 5 of 5) 5 points

What will be the value of the negative (N) bit? Give your answer as 0 or 1.

019 (part 1 of 5) 5 points

Consider the result of executing the following two 6811/6812 assembly instructions.

```
ldaa #71
adda #112
```

What is the value in Register A after these two instructions are executed? Give your answer in **signed decimal**.

020 (part 2 of 5) 5 points

What will be the value of the carry (C) bit? Give your answer as 0 or 1.

021 (part 3 of 5) 5 points

What will be the value of the overflow (V) bit? Give your answer as 0 or 1.

022 (part 4 of 5) 5 points

What will be the value of the zero (Z) bit?
Give your answer as 0 or 1.

023 (part 5 of 5) 5 points

What will be the value of the negative (N) bit? Give your answer as 0 or 1.

024 (part 1 of 1) 10 points

When performing integer arithmetic, does division distribute over addition. In particular, is the following equation true?
 $(A + B)/C = A/C + B/C$

1. No, there are situations where it is not correct.
2. Yes, it is always true.
3. There is not enough information to decide whether or not it is correct.

025 (part 1 of 1) 10 points

Using a 16-bit unsigned binary fixed-point number format with a resolution of 2^{-10} , determine the integer part of the fixed-point number that represents the value of $\sqrt{51}$.

026 (part 1 of 1) 10 points

Using a 16-bit unsigned decimal fixed-point number format with a resolution of 10^{-4} , determine the integer part of the fixed-point number that represents the value of $\sqrt{22}$.