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IS2021: Computer Systems
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L0 - Computer Systems

Instrucciones:

- **Leer** los enunciados y **dar respuestas exactas** de acuerdo a lo requerido en cada ejercicio. **Mostrar su trabajo y justificación** en todas sus respuestas.
- **Desarrollar de forma individual.**
- **No está permitido** usar material escrito o electrónico. **No está permitido** usar audífono u otros equipos electrónicos.
- Respuestas **no legibles** no tienen derecho a revisión.

Question 1. Convert the following decimal numbers to 5-bit binary numbers:

- Unsigned: 0,1,2,7,15,31
- Signed: $0,-1,-2,-4,-7,-16$

Question 2. Convert the following 5-bit values to decimal numbers. Consider both unsigned and two's complement formats:

- Values: 00101,01011,10101,11111,10000

Question 3. Convert the following decimal values to 8-bit hexadecimal numbers:

- Values: 0,10,14,15,16,32,127,255

Question 4. Convert the following decimal values to 8-bit hexadecimal numbers:

- Values: 0x1,0x2,0x8,0x10,0x7F,0xFF,0x80

Question 5. Negate the binary values from the previous question.

Question 6. What are the ranges (smallest..largest) for integer values that consist of 4, 5, 6, 7, and 8 bits? Consider both unsigned and two's complement formats.

Question 7. View and run the dumpbytes.c program.

```
1 cat dumpbytes.c
2 gcc dumpbytes.c -o dumpbytes
3 ./dumpbytes
```

Question 8. Describe how bytes of the $0xDEADBEEF$ value would be located in memory for Big- and Little-Endian convention.

Pay attention to addresses and byte ordering. Is your machine big- or little-endian?

Question 9. Zero-extend and sign-extend the following 4-bit values to 8 bits. Convert the result to decimal numbers.

- Values: 0001,1111,1010,1000,0111

Question 10. Perform the bitwise AND,OR and XOR operations for the following pairs of values:

- Values: (0011,1100),(1011,1101),(0101,1001),(1010,1110)

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