

Ch 2 Data Representation Quiz

1. Which hex digit corresponds to the 4-bit pattern 1101?
A. 0xB
B. 0xC
C. 0xD
D. 0xE
ANS:
2. Convert binary 10110 to decimal:
A. 20
B. 22
C. 18
D. 26
ANS:
3. In a 5-bit system, adding unsigned ints 28 and 6 sets which condition?
A. No flags set
B. Carry flag set
C. Overflow flag set
D. Zero flag set
ANS:
4. In a 5-bit system, subtracting unsigned ints 3 - 5 results in which carry/borrow status?
A. Carry=1 (Borrow=0)
B. Carry=0 (Borrow=1)
C. Carry=1 (Borrow=1)
D. Carry=0 (Borrow=0)
ANS:
5. On ARM Cortex-M3, the borrow and carry flags relation is:
A. Carry = Borrow
B. Carry = NOT Borrow
C. Borrow always 0
D. Carry always 0
ANS:
6. In two's complement, $TC(x)$ can be obtained by:
A. Invert bits
B. Invert bits and subtract one
C. Invert bits and add one
D. Add one then invert bits
ANS:
7. In a 5-bit system, which statement is true about -16 (10000_2)?
A. Its two's complement is 00000_2
B. Its two's complement is itself
C. It cannot be represented
D. It equals +16
ANS:
8. Signed overflow can occur when:
A. Adding operands with different signs
B. Subtracting operands with the same sign

- C. Adding two negatives
- D. Subtracting a negative from a negative

ANS:

9. In CPSR after ADD/SUB, which flag denotes carry?
- A. N
 - B. Z
 - C. C
 - D. V

ANS:

10. In a 5-bit system, to compute $a+b$ for $a=0b10000$ and $b=0b10000$, software should check which flag if a, b are unsigned vs. signed, respectively?
- A. Unsigned \rightarrow V, Signed \rightarrow C
 - B. Unsigned \rightarrow C, Signed \rightarrow V
 - C. Unsigned \rightarrow N, Signed \rightarrow Z
 - D. Unsigned \rightarrow Z, Signed \rightarrow N

ANS:

11. In a 5-bit system, the same binary addition can represent both unsigned $23+6=29$ and signed $-9+6=-3$ because:
- A. Adder interprets sign automatically
 - B. Two's complement allows the same hardware; interpretation differs in software
 - C. Hardware selects mode via a pin
 - D. Only subtraction shares hardware

ANS:

12. For `char str = "ARM Assembly"`, what must the final byte be and what is the string's size in Bytes?
- A. `0x00`; 13
 - B. `0x20`; 12
 - C. `0x41`; 13
 - D. `0x79`; 12 (ASCII hex code for lowercase 'y' is `0x79`)

ANS: