

Bit String Flicking – Solution

1. 02-03 C2 Bit String Flicking

$(LCIRC-2 (RSHIFT-1 (10110 AND 11010)))$ 00101
10110 AND 11010 = 10010
 $(RSHIFT-1 10010) = 01001$
 $(LCIRC-2 01001) = 00101$

2. 02-03 C2 Bit String Flicking

Evaluate. $((RSHIFT-1 (NOT (LCIRC-1 10110))) OR$ 11111
 $(NOT (LCIRC-1 (RSHIFT-1 01001))))$

 $= ((RSHIFT-1 (NOT 01101)) OR (NOT (LCIRC-1 00100)))$
 $= ((RSHIFT-1 10010 OR NOT 01000))$
 $= 01001 OR 10111 = 11111$

3. 03-04 C2 Bit String Flicking

Using order of operations, the expression simplifies: 11110
 $10110 OR 11000 AND NOT 00110 = 10110 OR 11000 AND 11001 =$
 $10110 OR 11000 = 11110$

4. 03-04 C2 Bit String Flicking

$(LSHIFT-2 (RCIRC-1 (LSHIFT-2 (LCIRC-3 01101))))$ 11000
 $(LSHIFT-2 (RCIRC-1 (LSHIFT-2 01011))) =$
 $(LSHIFT-2 (RCIRC-1 01100)) = (LSHIFT-2 00110) = 11000$

5. 04-05 C2 Bit String Flicking

$(LSHIFT-2 (RCIRC-1 (NOT 01010))) =$ 01000
 $(LSHIFT-2 (RCIRC-1 10101)) =$
 $(LSHIFT-2 11010) = 01000$

6. 04-05 C2 Bit String Flicking

$(LCIRC-2 01101) OR (RSHIFT-1 10110) AND (NOT 11011) =$ 10101
 $10101 OR 01011 AND 00100 =$
 $10101 OR 00000 = 10101$

7. 05-06 C2 Bit String Flicking

$X = 01101101$ 011111100
 $(LSHIFT-3 X) OR (RCIRC-4 X) AND (REV-2,3 X) =$
 $01101000 OR (11010110 AND 00111101) =$
 $01101000 OR 00010100 = 01111100$

8. 05-06 C2 Bit String Flicking

$$\begin{aligned}(\text{LCIRC} - 3 (\text{RSHIFT} - 1 01101)) &= && 10001 \\(\text{LCIRC} - 3 00110) &= 10001\end{aligned}$$

9. 06-07 C2 Bit String Flicking

$$\begin{aligned}(00101 \text{ OR } 01011 \text{ AND } 10110 \text{ XOR } 01110 \text{ OR } 11011 \text{ AND } 10110) &= && 11111 \\ \text{The order of operations is AND, XOR and then OR.} &&& \\ (00101 \text{ OR } ((01011 \text{ AND } 10110) \text{ XOR } 01110) \text{ OR } (11011 \text{ AND } 10110)) &= && \\ 11111 &&& \end{aligned}$$

10. 06-07 C2 Bit String Flicking

$$\begin{aligned}(\text{NOT} (\text{LSHIFT}-2 (\text{RCIRC}-1 01101))) &&& 00111 \\ (\text{RCIRC}-1 01101) &= 10110 && \\ (\text{LSHIFT}-2 10110) &= 11000 && \\ (\text{NOT } 11000) &= 00111 && \end{aligned}$$

11. 07-08 C2 Bit String Flicking

$$\begin{aligned}(\text{RSHIFT}-2 (\text{LCIRC}-1 01101)) &= (\text{RSHIFT}-2 11010) && 00110 \\ &= 00110 && \end{aligned}$$

12. 07-08 C2 Bit String Flicking

$$\begin{aligned} \text{The order of precedence is NOT, AND and then OR.} &&& 10110 \\ (\text{NOT } 01101 \text{ OR } 01101 \text{ AND } 10110) &= (10010 \text{ OR } 01101 \text{ AND } 10110) && \\ &= (10010 \text{ OR } 00100) && \\ &= 10110 && \end{aligned}$$

13. 08-09 C2 Bit String Flicking

$$\begin{aligned}(\text{RSHIFT}-3 (\text{LCIRC}-2 (\text{NOT } 10110))) &= (\text{RSHIFT}-3 (\text{LCIRC}-2 01001)) && 00000 \\ &= (\text{RSHIFT}-3 00101) && \\ &= 00000 && \end{aligned}$$

14. 08-09 C2 Bit String Flicking

$$\begin{aligned}(10110 \text{ OR } 01100) \text{ AND } (11001 \text{ XOR } 10110) &&& 01110 \\ = 11110 \text{ AND } 01111 &&& \\ = 01110 &&& \end{aligned}$$

15. 09-10 C2 Bit String Flicking

$$\begin{aligned}(\text{LCIRC}-2(\text{RSHIFT}-1(\text{RCIRC}-1 01101))) &&& 01101 \\ = (\text{LCIRC}-2(\text{RSHIFT}-1 10110)) = (\text{LCIRC}-2 01011) &= 01101 && \end{aligned}$$

16. **09-10 C2 Bit String Flicking**

Order of precedence is: NOT, AND, and then OR. 01101
NOT 10110 OR 01110 AND 10101 =
(NOT 10110) OR (01110 AND 10101) =
01001 OR 00100 = 01101

17. **10-11 C2 Bit String Flicking**

(RSHIFT-1 (LCIRC-2 (LSHIFT-3 (RCIRC-1 (NOT 10011)))) 00001
= (RSHIFT-1 (LCIRC-2 (LSHIFT-3 (RCIRC-1 01100))))
= (RSHIFT-1 (LCIRC-2 (LSHIFT-3 00110)))
= (RSHIFT-1 (LCIRC-2 10000))
= (RSHIFT-1 00010) = 00001

18. **10-11 C2 Bit String Flicking**

01110 OR 01100 AND 10110 = 01110 OR (01100 AND 10110) 01110
= 01110 OR 00100
= 01110

19. **11-12 C2 Bit String Flicking**

LSHIFT-2 01101 = 10100 00000
RCIRC-1 10100 = 01010
AND = 00000

20. **11-12 C2 Bit String Flicking**

(RSHIFT-1 (LCIRC-2 (NOT 01101))) 00101
= (RSHIFT-1 (LCIRC-2 10010))
= (RSHIFT-1 01010)
= 00101

21. **12-13 C2 Bit String Flicking**

(NOT (01101 OR 01011)) AND (01101 OR 00101) 00000
= (NOT 01111) AND 01101
= 10000 AND 01101
= 00000

22. **12-13 C2 Bit String Flicking**

(LCIRC-2 (RSHIFT – 1 (RCIRC – 1 (LSHIFT – 1 01101)))) 11000
= (LCIRC-2 (RSHIFT – 1 (RCIRC – 1 11010)))
= (LCIRC-2 (RSHIFT – 1 01101))
= (LCIRC-2 00110)

