Name: Aromal Kunnel

Reg. no.: 22BAI10288

Email: aromalkunnel2022@vitbhopal.ac.in

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Challenging Task-Peer Assessment 1
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On what input of a and b this program will display " I win the game"? Find the value of a and b. if (a & b >= 1) | (a^b <=1) : print("I win the game") else: print("I lose the game")

The program will display "I win the game" if either of the two conditions is satisfied:

Both a and b are greater than or equal to 1

The bitwise XOR operation between a and b results in a value less than or equal to 1

Randomly putting different values of a and b to see when the program will display "I win the game":

◻ a = 0, b = 0

Neither of the two conditions is satisfied, so the program will display "I lose the game".

◻ a = 2, b = 3

The first condition is satisfied (a & b >= 1), but the second condition (a^b <= 1) is not satisfied. Therefore, the program will display "I win the game".

◻ a = 5, b = 1

The first condition is satisfied (a & b >= 1), and the second condition (a^b <= 1) is also satisfied. Therefore, the program will display "I win the game".

◻ a = 1, b = 4

Neither of the two conditions is satisfied, so the program will display "I lose the game".

So, the program will display "I win the game" for values of a and b such that both a and b are greater than or equal to 1 or the bitwise XOR operation between a and b results in a value less than or equal to 1.

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On what input of a and b this program will display " I win the game" ? Find the value of a and b. And explain the logic of this program (Note: The order of evaluation and precedence of expression evaluation) .

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if (a & b >= 1) | (a^b <=1) :
        print("I win the game")
else:
        print("I lose the game")
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The program will display "I win the game" when the condition (a & b >= 1) | (a^b <=1) is true.

The logic of the program is as follows:

The ' &' operator performs bitwise ' AND' operation on the binary representation of ' a' and ' b' . If the result of this operation is greater than or equal to 1, the first part of the condition is true.
The ' ^' operator performs bitwise ' XOR' operation on the binary representation of ' a' and ' b' . If the result of this operation is less than or equal to 1, the second part of the condition is true.
The ' |' operator performs bitwise ' OR' operation on the two conditions. If either of the conditions is true, then the whole condition is true.

Therefore, for the program to display "I win the game", either of the two conditions should be true. This can happen in multiple ways depending on the values of ' a' and ' b' .

For example, if 'a' is '5' and 'b' is '3', then the binary representation of 'a' is '101' and 'b' is '011'. Performing the '&' operation on them results in '001', which is less than 1. Performing the '^' operation on them results in '110', which is greater than 1. Therefore, both parts of the condition are true, and the program displays "I win the game".