Question 1:

Compose a C++ program that utilizes bitwise operators to calculate the bitwise AND, OR, and XOR operations between two user-inputted integers (num1 and num2). Additionally, implement a left shift by 2 positions for another user-inputted integer (num3).

Input Format:

The program interacts with users through standard input.

Prompt the user to input the first integer (num1).

Prompt the user to input the second integer (num2).

Prompt the user to input an integer for left shift (num3).

Output Format:

After each input, the program systematically performs bitwise operations and left shift, displaying results in the following format:

"Bitwise AND: [resultAND]" for the AND operation.

"Bitwise OR: [resultOR]" for the OR operation.

"Bitwise XOR: [resultXOR]" for the XOR operation.

"Left Shift by 2: [leftShifted]" for the left shift operation by 2 positions.

Title for Question 1: Bitwise Operator

Solution:

```
#include <iostream>
using namespace std;


int main() {
    int num1, num2;



   // cout << "Enter the first integer: ";
    cin >> num1;



  //  cout << "Enter the second integer: ";
    cin >> num2;


    // Bitwise AND
    int resultAND = num1 & num2;
    cout << "Bitwise AND: " << resultAND << endl;
```

```
    // Bitwise OR
    int resultOR = num1 | num2;
    cout << "Bitwise OR: " << resultOR << endl;


    // Bitwise XOR
    int resultXOR = num1 ^ num2;
    cout << "Bitwise XOR: " << resultXOR << endl;


    // Left shift
    int num3;
  //  cout << "Enter an integer for left shift: ";
    cin >> num3;
    int leftShifted = num3 << 2;
    cout << "Left Shift by 2: " << leftShifted << endl;


    return 0;
}
```

TestCases:

S.No	Inputs	Outputs
1	12 34 7	Bitwise AND: 0 Bitwise OR: 46 Bitwise XOR: 46 Left Shift by 2: 28
2	34 6 8	Bitwise AND: 2 Bitwise OR: 38 Bitwise XOR: 36 Left Shift by 2: 32
3	3 6 7	Bitwise AND: 2 Bitwise OR: 7 Bitwise XOR: 5 Left Shift by 2: 28
4	43 5 21	Bitwise AND: 1 Bitwise OR: 47 Bitwise XOR: 46 Left Shift by 2: 84
5	23 54 4	Bitwise AND: 22 Bitwise OR: 55 Bitwise XOR: 33 Left Shift by 2: 16
6	1 2 3	Bitwise AND: 0 Bitwise OR: 3 Bitwise XOR: 3 Left Shift by 2: 12

White List:

Black List:

Question 2:

Given two strings, str1 and str2, the task is to swap their values without using any temporary variables. However, there's a problem in the provided code for this task. Your mission is to identify the flaw and submit a corrected version.

Write a program that accepts two strings as inputs, swaps their values without using an auxiliary variable, and then displays the results.

Input Format:

- Two separate lines, each containing a string. The first line will have the string for str1, and the second line will have the string for str2.

Output Format:

- The original values of str1 and str2 in the format: Before Swapping: str1= [value of str1] and str2= [value of str2]
- The swapped values of str1 and str2 in the format: After Swapping: str1= [swapped value of str1] and str2= [swapped value of str2]

Title for Question 2: Swap the two String

Solution:

```
#include <iostream>
#include <string>


int main() {
    std::string str1 ;
    std::string str2 ;

    std::cin>>str1;
    std::cin>>str2;


    std::cout << "Before swapping:" << std::endl;
    std::cout << "str1: " << str1 << std::endl;
    std::cout << "str2: " << str2 << std::endl;


    // Swap the strings without a temporary variable using XOR
    str1 = str1 + str2;
    str2 = str1.substr(0, str1.length() - str2.length());
    str1 = str1.substr(str2.length());


    std::cout << "After swapping:" << std::endl;
    std::cout << "str1: " << str1 << std::endl;
    std::cout << "str2: " << str2 << std::endl;


    return 0;
}
```

TestCases:

S.No	Inputs	Outputs
1	hello world	Before swapping: str1: hello str2: world After swapping: str1: world str2: hello
2	tesing code	Before swapping: str1: tesing str2: code After swapping: str1: code str2: tesing
3	hi hello	Before swapping: str1: hi str2: hello After swapping: str1: hello str2: hi
4	good bad	Before swapping: str1: good str2: bad After swapping: str1: bad str2: good
5	Call Action	Before swapping: str1: Call str2: Action After swapping: str1: Action str2: Call

S.No	Inputs	Outputs
6	Ten Nine	Before swapping: str1: Ten str2: Nine After swapping: str1: Nine str2: Ten

White List:

Black List:

Question 3:

Mrs.Kaira is a miser to the core. She saves money even on petite things. One day she heard a discount offer announced in a mall. She wants to purchase a lot of items to save her money. The discount is given only when at least two items are bought. Since each item has different discount prices, she finds it difficult to check the amount she has saved. So she approaches you to device an automated discount calculator to make her easy while billing.

Input Format

- Input consists of two floating-point values denoting the price of item1 and item2.
- The third input denotes the discount value in percentage.

Output Format

- The output consists of three floating values denoting total amount, discounted price, and amount saved.

Title for Question 3: The misers discount

Solution:

```
#include<iostream>
using namespace std;
int main()
{
  float item1,item2,discount;
  float total_amount,discount_price,amount_saved;
  cin>>item1>>item2>>discount;
  total_amount=item1+item2;
  amount_saved = (total_amount)*(discount/100);
  discount_price = (total_amount-amount_saved);
  cout<<"Total Amount: "<<total_amount<<endl;
  cout<<"Discount Price: "<<discount_price<<endl;
  cout<<"Amount Saved: "<<amount_saved;
  return 0;
}
```

TestCases:

S.No	Inputs	Outputs

1	10.0 20.0 15.0	Total Amount: 30 Discount Price: 25.5 Amount Saved: 4.5
2	12 34.5 40.0	Total Amount: 46.5 Discount Price: 27.9 Amount Saved: 18.6
3	13 45 56	Total Amount: 58 Discount Price: 25.52 Amount Saved: 32.48
4	23 55 66	Total Amount: 78 Discount Price: 26.52 Amount Saved: 51.48
5	32 3 9	Total Amount: 35 Discount Price: 31.85 Amount Saved: 3.15
6	2 5 6	Total Amount: 7 Discount Price: 6.58 Amount Saved: 0.42

White List:

Black List:
