

Exercise 8: Bitwise Operations

1. The bits in the result of an expression using the ____ operator are set to 1 if at least one of the corresponding bits in either operand is set to 1. Otherwise, the bits are set to zero.
2. The bits in the result of an expression using the ____ operator are set to 1 if the corresponding bits in each operand are set to 1. Otherwise, the bits are set to zero.
3. The bits in the result of an expression using the ____ operator are set to 1 if exactly one of the corresponding bits in either operand is set to 1. Otherwise, the bits are set to zero.
4. The bitwise AND operator & is often used to ____ bits, that is to select certain bits from a bit string while zeroing others.
5. The ____ and ____ operators are used to shift the bits of a value to the left or to the right, respectively.
6. Determine and verify the results of the following hexadecimal values:
 - a. $3 \& 5 =$
 - b. $E \& E =$
 - c. $F \& 7 =$
 - d. $3 | 5 =$
 - e. $E | E =$
7. Determine and verify the results of the following operations:
 - a. $0x1234 \ll 3 =$
 - b. $0x1234 \gg 2 =$

8. Write a program that will perform Shift Left or Shift Right operation depending on the choice entered by the user. If the choice is 1, shift left is performed or 2, which will shift right. The user will then enter the value and the number of time to be shifted. The result will be displayed on the screen.

A sample run is as follows:

Choice:

- 1. Shift Left**
- 2. Shift Right**

Enter choice: 1

Enter value: 8

Enter times: 2

The value 8 shifted 2 times is 32