Assignment-10 Tasks

Solve any TEN

1. **4-bit Parity Generator :** Function computes even/odd parity of a 4-bit input.
2. **Population Count (Bit Counter) :** Function counts number of 1's in an N-bit input. :
3. **Maximum of Three Numbers :** Function returns maximum among three inputs.
4. **Minimum of Three Numbers :** Function returns minimum among three inputs.
5. **4-bit Gray to Binary Converter** : Function converts Gray code to binary.
6. **Binary to Gray Code Converter :** Function converts binary to Gray code.
7. **Bitwise Circular Left Rotate :** Function performs a left rotate on input vector.
8. **Bitwise Circular Right Rotate :** Function performs a right rotate on input vector.
9. **Odd/Even Number Detector :** Function checks if a number is odd or even.
10. **4-bit Magnitude Comparator :** Function compares two numbers and returns result (−1, 0, +1).
11. **Hamming Distance :** Function computes Hamming distance between two binary numbers.
12. **Check for Prime Number (limited range) :** Function checks if a small number (say 4-bit) is prime.
13. **Factorial (small number) :** Function computes factorial of a small integer (limited to avoid overflow).
14. **Fibonacci Number (Nth term) :** Function returns Nth Fibonacci number.
15. **Majority Detector (3-bit input) :** Function returns 1 if majority of bits are 1.
16. **Ones Complement Generator :** Function returns 1's complement of input.
17. **Twos Complement Generator :** Function returns 2's complement of input.
18. **Bit Reversal :** Function reverses bit order of input (MSB ↔ LSB).
19. **Palindrome Checker (binary vector) :** Function checks if input binary vector is same forward and backward.
20. **Even Parity Checker (Error Detection) :** Function checks if parity of input matches expected parity.