String Operations

Reverse:
Input: a string
Output: a string of the same length with the characters in the opposite order
Example: Reverse (1011)= 1101

Complement (two's complement):
Input: binary string
Output: a binary string where all the original 1s are changed to 0s and original string 0s are changed to 1s
Example: complement (1011 0001)= 0100 1110

Transpose:
Linear: Transpose a string n places
Input: a string
Output: a string of the same length the bit in position 0 moves n places to the left to n+1, position 2 to n+2, and so on.
Any bits that move beyond the original string length are brought around to the right side of the string.
Example: Transpose (ABCDEF) 3 places= DEFABC (D is at the A's place so the next character wraps around)

Stringlength:
Input: a string length
Output: a whole number equal to the number of characters in the string length
Example: stringlength (computer)= 8

Checksum:
Input: a binary string
Output: a whole number equal to the sum of the binary values (the number of 1s in the string)
Example: checksum (1001)= 2

MSB/LSB:
Most significant/ Least significant
  Left most   Rightmost
    Bits   Bits (the number of bits must be stated or known)
    Bit   Bit
    Byte   Byte

Concatenate: (the string length of the concatenation is the sum of its two parts)
Input: two strings
Output: a string where the characters of the second string are to the right of the first in the same order as the originals
Example: concatenate (1101 with/ and 0011)= 11010011

Pad:
Input: a binary/ hex string of length n, where n<m
Output: a string of length m, starting with m-n 0s, concatenated with the original string (left fill with 0s until the desired length)
Example: pad until 6 bits(1001): 001001

Split a string into n partitions:
Input: a string of length m
Output: If m is divisible by n, the number of splits, (m/n, R=0), then write the first m/n bits as an individual string, the next m/n bits as a string and so on.
If m is not divisible by n, keep padding the string until the string length is divisible by n.