

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 .