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```
close all; clearvars; clc
```

DEC-TO-BIN CONVERSION (BYTES-to-BITS)

```
InDec = [2 254 170];
OutBin = Dec2Bin(InDec)
```

BIN-TO-DEC CONVERSION (BITS-to-BYTES)

```
InBin = [1 0 1 0 1 0 1 0 1 1 1 1 1 1 1 0 0 0 0 1 0 1 0 0];
OutDec = Bin2Dec(InBin)
```

```
OutDec =

   170
   254
    20
```

DEC-TO-HEX BYTE CONVERSION (BYTES-to-BYTES)

```
InDec = [170 254 20];
OutHex1 = Dec2Hex_v1(InDec)                % output bytes as a single string
OutHex2 = Dec2Hex_v2(InDec)                % output bytes as multiple strings
```

```
OutHex1 =

    'AAFE14'
```

```
OutHex2 =

  1×3 string array
```

```
    "AA"    "FE"    "14"
```

HEX-TO-DEC BYTE CONVERSION (BYTES-to-BYTES)

```
InHex1 = ['AA';'FE';'14'];
OutDec1 = hex2dec(InHex1)                    % if input bytes are already
 columnwise

InHex2 = 'AAFE14';
OutDec2 = Hex2Dec(InHex2)                    % if input bytes are all in a
 single row
```

```
OutDec1 =

   170
   254
    20


OutDec2 =

   170
   254
    20
```

BIN-TO-HEX CONVERSION (BITS-to-BYTES)

```
InBin = [1 0 0 1 1 1 1 0 0 0 0 0 0 1 0 0];
OutHex = Bin2Hex(InBin)
```

```
OutHex =

  1×2 string array

    "9E"    "04"
```

HEX-TO-BIN CONVERSION (BYTES-to-BITS)

```
InHex = ['AA';'FE';'14'];
OutBin = Hex2Bin(InHex)
```

```
OutBin =

  Columns 1 through 13
```

```
     1     0     1     0     1     0     1     0     1     1     1     1     1

  Columns 14 through 24

     1     1     0     0     0     0     1     0     1     0     0
```

CONVERSION FUNCTIONS

```
function [ OutBits ] = Dec2Bin( InDecBytes )
    OutBits = reshape(de2bi(InDecBytes,8,'left-msb').',[1
 8*length(InDecBytes)]);   % NB: 8 means bpb
end


function [ OutDecBytes ] = Bin2Dec( InBits )
    OutDecBytes = bi2de(reshape(InBits,8,length(InBits)/8).','left-msb');
      % NB: 8 means bpb
end


function [ OutHexBytes ] =  Dec2Hex_v1( InDecBytes )
    OutHexBytes = reshape(dec2hex(InDecBytes,2).',[1,2*length(InDecBytes)]);

end


function [ OutHexBytes ] =  Dec2Hex_v2( InDecBytes )
    ByteLen = length(InDecBytes);
    HexChar = reshape(dec2hex(InDecBytes,2).',[1,2*ByteLen]);
      % NB: 2 is the number of chars for byte
    OutHexBytes = strings(1,ByteLen);
    for j = 1:ByteLen
        OutHexBytes(j) = strcat(HexChar(2*j-1),HexChar(2*j));
    end
end


function [ OutDecBytes ] =  Hex2Dec( InHexBytes )
    OutDecBytes = hex2dec(reshape(InHexBytes,[2 length(InHexBytes)/2]).');
      % NB: 2 is the number of chars for byte
end


function [ OutHexBytes ] = Bin2Hex( InBits )
    DecBytes = Bin2Dec(InBits);
    OutHexBytes = Dec2Hex_v2(DecBytes);
end


function [ OutBits ] = Hex2Bin( OutHexBytes )
    DecBytes = hex2dec(OutHexBytes);
```

```
    OutBits = reshape(de2bi(DecBytes,8,'left-msb').',[1 8*length(DecBytes)]);
end
```

```
OutBin =

  Columns 1 through 13

     0     0     0     0     0     0     1     0     1     1     1     1     1

  Columns 14 through 24

     1     1     0     1     0     1     0     1     0     1     0
```

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