

# CSE 232 SPRING 2020

## HOMEWORK 01

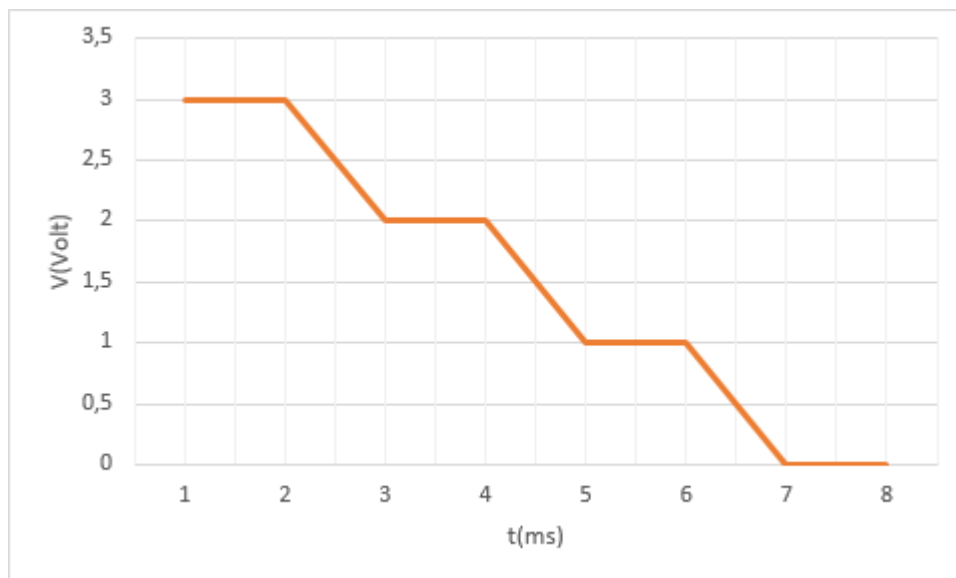
1)

0 V	00
1 V	01
2 V	10
3 V	11

Audio Signal = 1111101001010000

Separate by twos

11	11	10	10	01	01	00	00
3 V	3 V	2 V	2 V	1 V	1 V	0 V	0 V



2)

- a.  $(000011)_2 = 0 \cdot 2^5 + 0 \cdot 2^4 + 0 \cdot 2^3 + 0 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0 = 3$
- b.  $(1111)_2 = 1 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0 = 15$
- c.  $(11110)_2 = 1 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 30$
- d.  $(111100)_2 = 1 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 0 \cdot 2^1 + 0 \cdot 2^0 = 60$
- e.  $(0011010)_2 = 0 \cdot 2^6 + 0 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 0 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 26$

3)

a. 11001101

$$1100 = C, 1101 = D \text{ . } 11001101 = CD$$

b. 10100101

$$1010 = A, 0101 = 5 \text{ . } 10100101 = A5$$

c. 11110001

$$1111 = F, 0001 = 1 \text{ . } 11110001 = F1$$

d. 1101101111100

$$0001 = 1, 1011 = B, 0111 = 7, 1100 = C \text{ . } 1101101111100 = 1B7C$$

4)

a.  $(10)_{16} = 1 \cdot 16^1 + 0 \cdot 16^0 = 16$

b.  $(4E3)_{16} = 4 \cdot 16^2 + 14 \cdot 16^1 + 3 \cdot 16^0 = 1251$

c.  $(FF0)_{16} = 15 \cdot 16^2 + 15 \cdot 16^1 + 0 \cdot 16^0 = 4080$

d.  $(200)_{16} = 2 \cdot 16^2 + 0 \cdot 16^1 + 0 \cdot 16^0 = 512$

5)

a. LET

$$L = 76 = (01001100)_2$$

$$E = 69 = (01000101)_2$$

$$T = 84 = (01010100)_2$$

$$LET = 01001100 \ 01000101 \ 01010100$$

b. RESET!

$$R = 82 = (01010010)_2$$

$$E = 69 = (01000101)_2$$

$$S = 83 = (01010011)_2$$

$$E = 69 = (01000101)_2$$

$$T = 84 = (01010100)_2$$

$$! = 33 = (00100001)_2$$

$$RESET! = 01010010 \ 01000101 \ 01010011 \ 01000101 \ 01010100 \ 00100001$$

c. HELLO\$1

$$H = 72 = (01001000)_2$$

$$E = 69 = (01000101)_2$$

$$L = 76 = (01001100)_2$$

$$L = 76 = (01001100)_2$$

$$O = 79 = (01001111)_2$$

$$\text{\$} = 36 = (00100100)_2$$

$$1 = 49 = (00110001)_2$$

HELLO\$1 = 01001000 01000101 01001100 01001100 01001111 01001111 0011000