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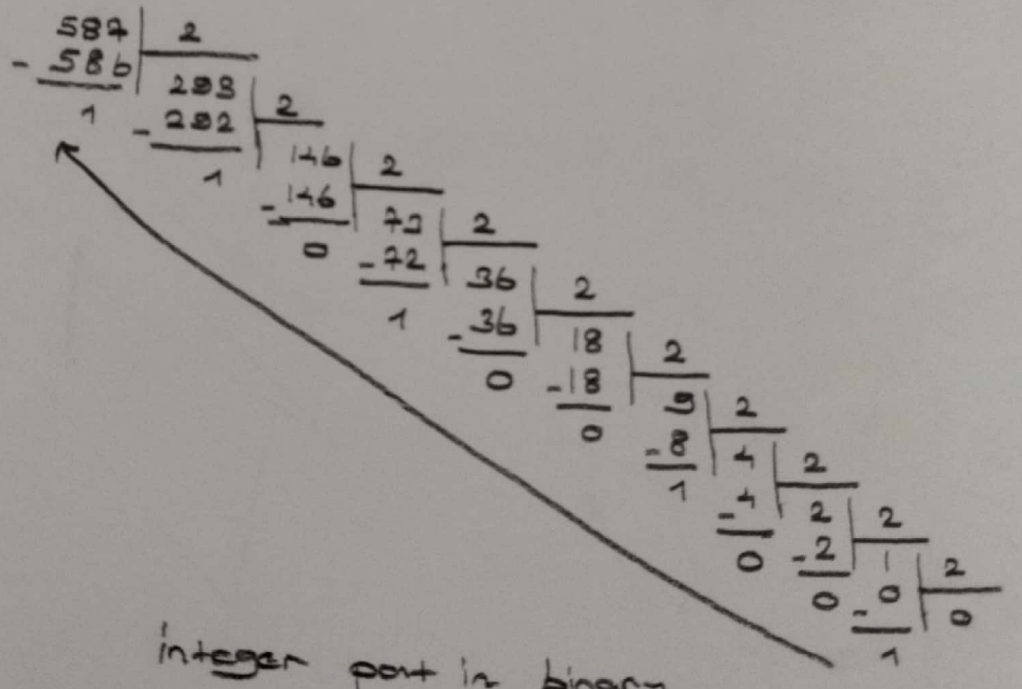
Surname : Gülsoy

- CENG 214 ASSIGMENT - 1 -

Decimal	Hexadecimal	Octal	Binary
587.254	24B.41	1113.202	1001001011.01000001
56338.269	DC12.45	156022.212	1101110000010010.0100010
298.40625	12A.68	452.32	100101010.011010
57.5625	39.9	71.44	111001.1001

Question 1-) Converting decimal number 587.254 into binary number



integer part in binary

1001001011

Fractional Part

0.254 × 2	⇒ 0.508	0
0.508 × 2	⇒ 1.016	1
0.016 × 2	⇒ 0.032	0
0.032 × 2	⇒ 0.064	0
0.064 × 2	⇒ 0.128	0
0.128 × 2	⇒ 0.256	0
0.256 × 2	⇒ 0.512	0
0.512 × 2	⇒ 1.024	1

↓

• 01000001

part after the radix point

binary: 1001001011.01000001

we ca convert binay Form of 587.254 into hexadecimal

0010010010 11 . 0100 0001

2 4 B 4 1

hexadecimal: (24B.41)h

we ca convert binay Form of 587.254 into octal

001 001 001 011 . 010 000 010

1 1 1 3 2 0 2

Octal: (1113.202)8

For given hexadecimal number DC12.45

Converting DC12.45 into binary number

1 → 0001
2 → 0010
4 → 0100
5 → 0101
C → 1100
D → 1101

binary: 1101110000010010 . 01000101

Converting binary Form of DC12.45 into decimal

1101110000010010.

Integer part

$2^1 \times 1 + 2^4 \times 1 + 2^{10} \times 1 + 2^{11} \times 1 + 2^{12} \times 1 + 2^{14} \times 1 = 56338$

For Fractional part

. 01000101

$2^{-2} \times 1 + 2^{-6} \times 1 + 2^{-8} \times 1 = 0.269$

decimal: 56338.269

converting binary Form of DC12.45 into octal

001 101 110 000 010 010 . 010 001 010
1 5 6 0 2 2 2 1 2

octal: 156022.212

converting octal number 152.32 into binary equivalent

Octal		binary
2	→	010
3	→	011
1	→	100
5	→	101

binary: 100101010.011010

converting binary Form of 152.32 into hexadecimal

000100101010. 01101000
1 2 A 6 8

hexadecimal: $(12A.68)_h$

converting binary Form of 152.32 into decimal

100101010.

Integer part

$2^1 \times 1 + 2^3 \times 1 + 2^5 \times 1 + 2^8 \times 1 = 298$

• 011010

Fractional part

$2^{-2} \times 1 + 2^{-3} \times 1 + 2^{-5} \times 1 = 0.40625$

decimal: 298.40625

converting 111001.1001 into hexadecimal

$$\underbrace{00111001}_{3\quad 9}.\underbrace{1001}_{9}$$

hexadecimal : $(39.9)_h$

converting 111001.1001 into octal

$$\underbrace{111}_{7}\underbrace{001}_{1}.\underbrace{100}_{4}\underbrace{100}_{4}$$

octal : $(71.44)_o$

converting 111001.1001 into decimal

$\underbrace{111001}_{}.$ Integer part

$2^0 \times 1 + 2^3 \times 1 + 2^4 \times 1 + 2^5 \times 1 = 57$

$.\underbrace{1001}$ Fractional part

$2^{-1} \times 1 + 2^{-4} \times 1 = 0.5625$

$57 + 0.5625 = 57.5625$

decimal : 57.5625

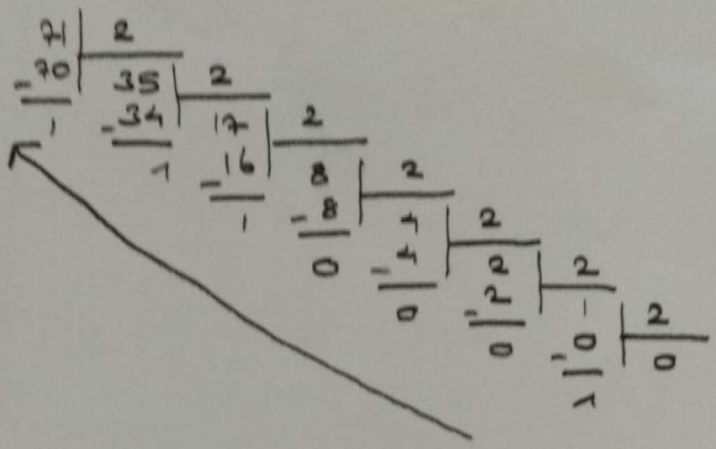
Question-2) Original name: GÖKAY

we will represent : GOKAY in ASCII

name: GOKAY

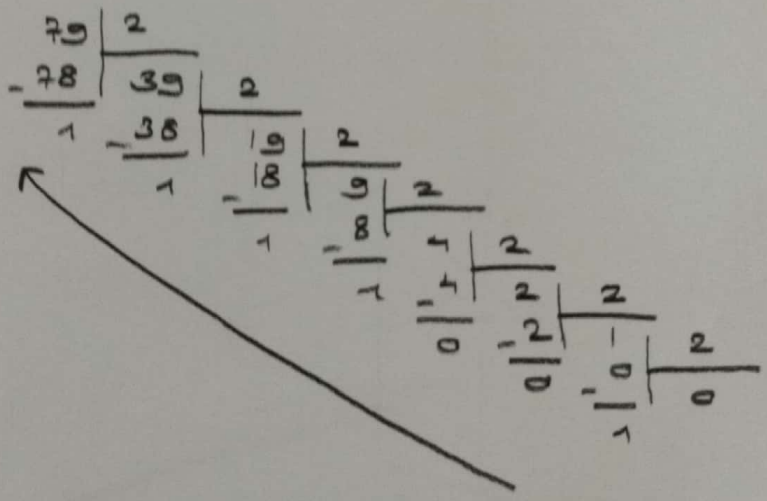
in decimal: 71 79 75 65 89

character G of GOKAY



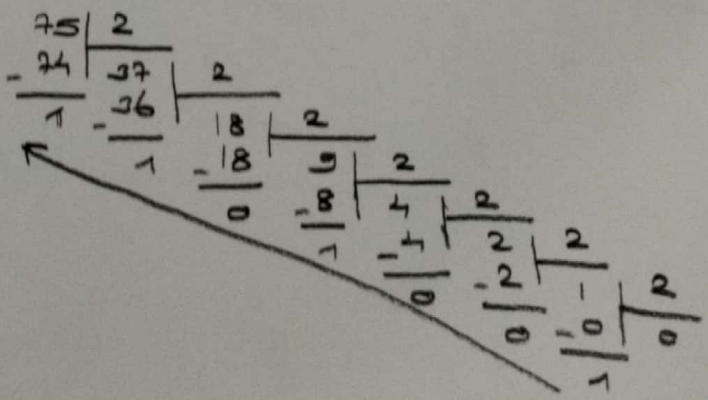
G in binary : 1000111

character O of GOKAY



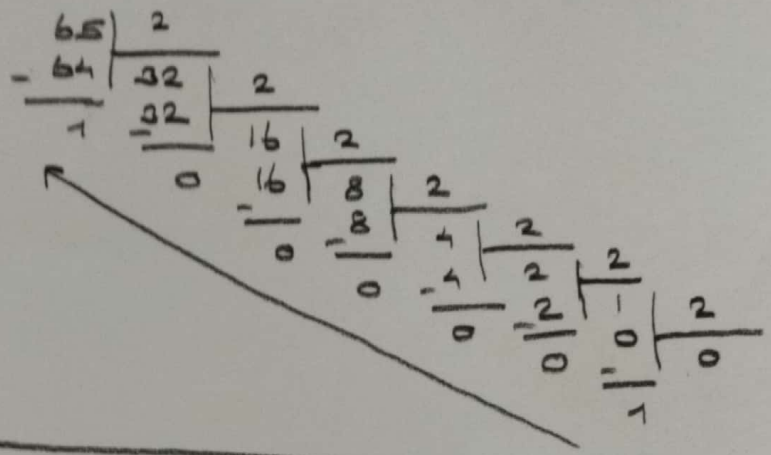
O in binary : 1001111

character K of GOKAY



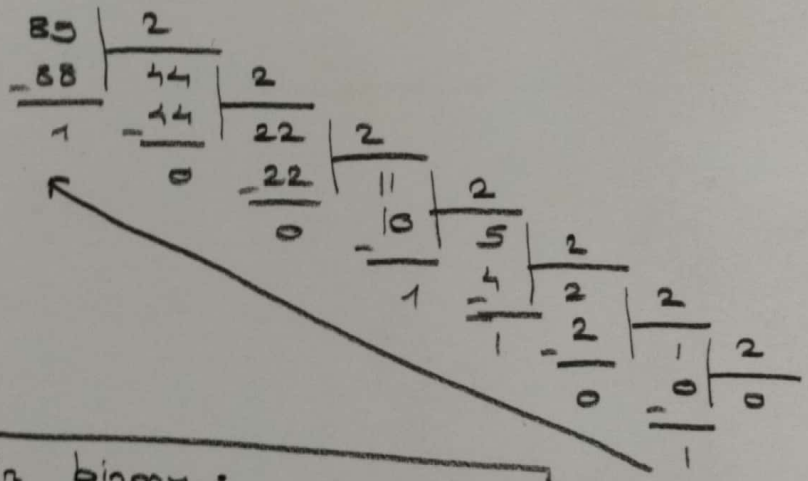
K in binary: 1001011

character A of GOKAY



A in binary: 1000001

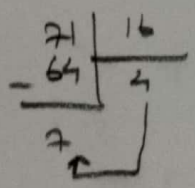
character Y of GOKAY



Y in binary: 1011001

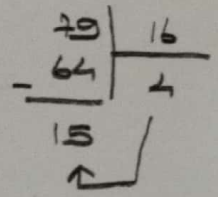
character names in hexadecimal base are as follows

character G of GOKAY



G in hexadecimal : (47)h

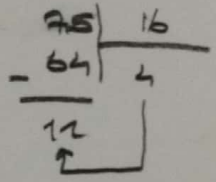
character O of GOKAY



hexadecimal	decimal
F	15

O in hexadecimal : (4F)16

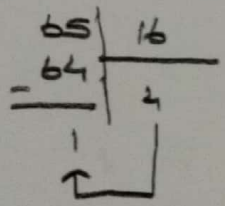
character K of GOKAY



hexadecimal	decimal
B	11

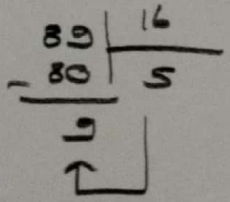
K in hexadecimal : (4B)h

character A of GOKAY



A in hexadecimal : (41)h

character Y of GOKAY



Y in hexadecimal : (59)h

name : GOKAY

in decimal : 71 79 75 65 89

in binary : (1000111) (1001111) (1001011) (1000001) (1011001)

Question 3-)

Addition

```
  1 1 1 1 1 1 1 1   → carries
  1 1 1 0 1 0 1 1
+ 1 1 1 1 1 1 1 1
-----------------
1 1 1 1 0 1 0 1 0
```

result : 111101010

Subtraction

```
      1
    4 7 1
  0   0 1
  1 1 1 0 1 0 1 1
- 0 0 0 1 1 1 0 1
-----------------
  1 1 0 0 1 1 1 0
```

result: 1100 1110

Multiplication

```
carry  1 1 0 1
     x     1 1
     -------
     1 1 1 0 1
   + 1 1 0 1 0
   -----------
   1 0 0 1 1 1
```

result : 100111