**Reprezentarea numerelor intregi fara semn(naturale):**

**Ex 1**

Reprezentati intrun registru numarul 3710

1. Realizam conversia in binar putem utiliza metoda impartirii sau metoda reprezentarii puterilor pentru 2

32 + 4 + 1 =25 + 22 + 20 = (100101)2

1. Pentru reprezentarea numarului este suficient sa alegem registru pe 8 biti

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

**Ex 2**

Reprezentati intrun registru numarul F116

1. Realizam cinversia in binar utilizind metoda substitutiei directe

F116 = 111100012

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

***Ex 3***

Reprezenta intrun registru pe 16 biti numarul 5138

1. Realizam conversia in binar utilizind metoda substitutiei directe 5138 = 101 001 011

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |
| 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

Sa se reprezinte numarul +13010 in cod invers

1. Realizam conversia in binar +13010 =

130 / 2 = 65 + 0/2

65 / 2 = 32 + 1 / 2

32 / 2 = 16 + 0 / 2

16 / 2 = 8 + 0 / 2

8 / 2 = 4 + 0 / 2

4 / 2 = 2 + 0 / 2

2 / 2 = 1 + 0 / 2

1 / 2 = 0 +1 / 2

STOP

+13010 = 100000102

**Metoda 2 de conversie**

+13010 = 128 + 2 = 27 + 21 = 1000 00102

1. Alegem pentru reprezentarea numarului un registru de memorie 16 biti

Reprezentarea codului direct al numarului +13010

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 15 S | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

1. Codul invers al numarului 13010 coincide cu codul direct deoarece semnul este +;

**Sa se reprezinte codul invers al numarului – A4516**

1. Transformam numarul in binar prin metoda substitutiei directe

-A4516 =-1010 0100 01012

2)Repreznetam in registru de memorie codul direct al numarului -A4516 in binar

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 15 S | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

3) reprezentam codul indirect

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |
| 15 S | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

Ex2 Realizati conversia numaruli 371,258 in hexazecimal

1. Transformam numarul in binar fiecare cifra va fi substituiita cu 3 cifre binare

371,258 = 011 111 001, 010 1012

1. Transformam din binar in hexazecimal (grupand cate 4)

1111 1001,0101 01002 = F9,5416

Ex3 Realizarea conversiei numarului A216 in octal

1. Transformam numarul in binar

A216 = 1010 00102

1. Transformam in octal numarul binar obtinut

010 100 0102 = 2428

Ex 4 Realizeaza conversia numarului 125,410 in hexazecimal

Conversia numerelor din baza 10 se realizeaza prin metoda inmultirii shi impartirii

125,410 = 125 + 0,4

125 / 16 = 7 + 13/16

7 / 16 = 0 +7 / 16

Stop

7D = 125

0,4 \* 16 = 6,4

0,4 \* 16 = 6,4

0,410 = 0,(6)16

125,410 = 7D,(6)16

Ex 1 Realizeaza conversia numarului 246,12510 in hexazecimal

246 + 0,125

246 / 16 = 15 + 6/16

15 / 16 = 0 + 15/16

0,125 \* 16 = 2,0 stop

246,12510 = F6,216

Ex2 583,067510 =247,1(147AE)

583/16 = 36 + 7/16

36/16 = 2 + 4/16

2/16 = 0 + 2/16

0,0675 \* 16 = 1,08

0,08 \* 16 = 1,28

0,28 \* 16 = 4,48

0,48 \* 16 = 7,68

0,68 \* 16 = 10,88

0,88 \* 16 = 14,08

0,08 \* 16