**Alex Placinta**

[**alexplcnt@gmail.com**](mailto:alexplcnt@gmail.com)

**0741971491**

1. **PART 1. Cifre romane**

I=1;

V = 5;

X = 10;

L = 50;

C = 100;

D = 500;

M = 1000;

1. Exerciții
2. XVII= 17
3. XIV = 14
4. XLIX = 49
5. CCMMXXC = 2100 [100 +(1000-100) +1000 +10+(100-10)]
6. MDCCCLXXX = 1880(1000+ 500+300+50+10+10+10)]
7. 8 = VIII;
8. 15 =XV;
9. 21 = XXI;
10. 59 = LIX;
11. 164 = CLXIV;
12. 1789 = MDCCLXXXIX;

**II. PART 2 .Cifre arabe**

1958 = 1 x + 9 x + 5 x + 8 x ;

Exerciții:

1. 4 = 4 x ;
2. 61 = 6 x + 1 x ;
3. 704 = 7 x + 0 x + 4 x ;
4. 26534 = 2 x + 6 x + 5 x + 3 x + 4 x ;

**Baza 10**: 0, 1, 2, 3, 4, 5, 6, 7, 8 ,9

**Baza 3** : 0, 1, 2

*Exemplu*: = 1 x + 0 x + 2 x + 1 x = 1 x 27 + 0 x 9 + 2 x 3 + 1 x 1 = 27 + 0 + 6 + 1= 34;

**III. PART 3**. **Sistem binar/ hexazecimal**

Binar : 0,1 :

Hexazecimal : 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F

**Tema : EX 1**

1. **=**

**IV. Part 4. Fractii**

Ex: 23,81 = 2 x + 3 x + 8 x + 1 x

**TEMA : EX 2**

**= 1 x + 2 x**

**= 1 x + 0 x + 0 x + 1 x + 1 x**

**= B x + D x + 3 x + A x + 0 x +C x**

**IV. PART 4. Conversia numerelor zecimale in alte sisteme numerice**

1453 / 3 = 484, remainder =1

484 / 3 = 161 , reminder = 1

161 / 3 = 53 , remainder = 2

53 / 3 = 17, remainder = 2

17 / 3 = 5, remainder = 2

5 /3 = 1, remainder = 2

1 / 3= 0, remainder = 1

1453 =

Conversia 51 in baza 2

51/2= 25, r=1;

25/2 = 12, r=1;

12 / 2 = 6 , r=0;

6 / 2 = 3, r= 0;

3/ 2= 1, r=1;

½ = 0, r=1

51=

**Exercitiu:**

*1. 8 in baza 2*

8/2= 4, r=0;

4/2 = 2, r=0

2/2 = 1, r=0

½=0, r=1

8=

*2. 41 in baza 3*

41/3= 13, r 2;

13/3=4, r 1;

4/3=1. R= 1;

1/3 = 0 , r= 1

41 =

*3. 516 in baza 5*

516/5= 103, r 1;

103/5= 20, r3;

20/5 = 4, r0;

4/5=0, r 4;

516 =

*4. 5234 in baza 16*

5234/ 16 = 327, r 2;

327 / 16= 20, r7;

20/16 = 1, r 4;

1/16 = 0, r 1;

5234 =

**V. Coduri binare (BCD)**

|  |  |
| --- | --- |
| Cifra zecimala | BCD |
| 0 | 0000 |
| 1 | 0001 |
| 2 | 0010 |
| 3 | 0011 |
| 4 | 0100 |
| 5 | 0101 |
| 6 | 0110 |
| 7 | 0111 |
| 8 | 1000 |
| 9 | 1001 |

**VI. Operatori logici**

**Tabela de adevăr pentru *ȘI***

|  |  |
| --- | --- |
| **x y** | **f** |
| **0 0** | **0** |
| **0 1** | **0** |
| **1 0** | **0** |
| **1 1** | **1** |

**Tabelă de adevăr pentru *SAU***

****

**Operator de negare (NOT) !**

****

**!p&&q||s⬄!((p&&q)||s)**

**Exercițiu:**

**1. !p||q && s || q = (!p||(q&&s))||q**

**2. q && !p ||s && t = (q && !p) ||(s &&t)**

**3. q &&s||p&& !s &&q = (q &&s) ||((p&& !s) &&q)**

**Legile lui DeMorgan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **p** | **q** | **Not p** | **Not q** | **Not p and not q** |
| **true** | **true** | **false** | **False** | **False** |
| **false** | **true** | **true** | **False** | **False** |
| **true** | **false** | **false** | **True** | **False** |
| **false** | **false** | **true** | **True** | **true** |

|  |  |  |  |
| --- | --- | --- | --- |
| **P** | **q** | **P or q** | **Not(p or q)** |
| **True** | **true** | **true** | **False** |
| **False** | **true** | **true** | **False** |
| **True** | **false** | **true** | **False** |
| **False** | **false** | **false** | **True** |

Tema:

Prove that *not(p and q) = not p or not q* by writting table of values for both expressions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q | !p | !q |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**VII. Algoritmi**

* Calculează cel mai mare divizor comun.

**VIII. Scheme logice**

* Reprezentarea ordinii
* Start
* Input
* Procesul operational
* Condiția
* End ( sfârșitul)

**start**

**Yes**

**No**

**a>b**

**Input a and b**

**End**

**Output b**

**Output a**