

UNIVERSIDAD MODELO  
INGENIERÍA EN DESARROLLO DE  
TECNOLOGÍA Y SOFTWARE



TAREA # 1

Actividad 1 - Ejercicios de Conversiones

**Matemáticas Discretas**

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## ACTIVIDAD # 1

1.- 345672.392<sub>(10)</sub> → Binario

$345672 \div 2 = 172,836$	0	$21 \div 2 = 10.5$	1
$172836 \div 2 = 86,418$	0	$10 \div 2 = 5$	0
$86418 \div 2 = 43,209$	0	$5 \div 2 = 2.5$	1
$43209 \div 2 = 21,604.5$	1	$2 \div 2 = 1$	0
$21604 \div 2 = 10,802$	0		
$10802 \div 2 = 5,401$	0	$0.392 \times 2 =$	0
$5401 \div 2 = 2,700.5$	1	$0.784 \times 2 =$	1
$2700 \div 2 = 1,350$	0	$0.568 \times 2 =$	1
$1350 \div 2 = 675$	0		
$675 \div 2 = 337.5$	1		
$337 \div 2 = 168.5$	1		
$168 \div 2 = 84$	0		
$84 \div 2 = 42$	0		
$42 \div 2 = 21$	0		

R = 1010100011001001000.011

1 = INDIVIDUAL

$$2 = 19900203.231_{(110)} \rightarrow \text{Octal}$$

$$19900203 \div 8 = 2487525 \text{ R} = 3$$

$$2487525 \div 8 = 310940 \text{ R} = 5$$

$$310940 \div 8 = 38867 \text{ R} = 4$$

$$38867 \div 8 = 4858 \text{ R} = 3$$

$$4858 \div 8 = 607 \text{ R} = 2$$

$$607 \div 8 = 75 \text{ R} = 7$$

$$75 \div 8 = 9 \text{ R} = 3$$

$$9 \div 8 = 1 \text{ R} = 1$$

$$8 \div 8 = 1$$

$$0.231 \times 8 = 1.848 \quad | \quad 1$$

$$0.848 \times 8 = 6.784 \quad | \quad 6$$

$$0.784 \times 8 = 6.272 \quad | \quad 6$$

$$R = 113723453.166_{(8)}$$

FlkyBook



3:13061990.656<sub>(10)</sub> → Hexadecimal

$$13061990 \div 16 = 816374 \quad R=6$$

$$816374 \div 16 = 51023 \quad R=6$$

$$51023 \div 16 = 3188 \quad R=15$$

$$3188 \div 16 = 199 \quad R=4$$

$$199 \div 16 = 12 \quad R=7$$

$$192 \div 16 = 12$$

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$$0.656 \times 16 = 10$$

$$0.466 \times 16 = 7$$

$$0.936 \times 16 = 14$$

R = C74F66.A7E

4-8103523739.512<sub>(10)</sub>  $\rightarrow$  Octal

$$8103523739 \div 8 = 3$$

$$1012940467 \div 8 = 3$$

$$126617558 \div 8 = 6$$

$$15827194 \div 8 = 2$$

$$1978399 \div 8 = 7$$

$$247299 \div 8 = 3$$

$$30,912 \div 8 = 0$$

$$3,864 \div 8 = 0$$

$$483 \div 8 = 3$$

$$60 \div 8 = 4$$

$$8 \div 8 = 1$$

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$$0.512 \times 8 = 4$$

$$0.096 \times 8 = 0$$

$$0.768 \times 8 = 6$$

R=14300372633.406<sub>(8)</sub>

5: 353840429.112 (10)  $\rightarrow$  Hexadecimal

$$353840429 \div 16 = 13$$

$$22115026 \div 16 = 2$$

$$1382189 \div 16 = 13$$

$$86386 \div 16 = 2$$

$$5399 \div 16 = 7$$

$$337 \div 16 = 1$$

$$21 \div 16 = 5$$

$$16 \div 16 = 1$$

$$R = 15172D2D.7CA_{(16)}$$

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$$0.112 \times 16 = 1$$

$$0.792 \times 16 = 12$$

$$0.672 \times 16 = 10$$



9

6.1001100110011.1100011<sub>(2)</sub> → Decimal

$$0 \times 2^{12} = 0$$

$$1 \times 2^{-1} = 0.5$$

$$0 \times 2^{11} = 0$$

$$1 \times 2^{-2} = 0.25$$

$$0 \times 2^{10} = 0$$

$$0 \times 2^{-3} = 0.0$$

$$1 \times 2^9 = 512$$

$$0 \times 2^{-4} = 0.0$$

$$1 \times 2^8 = 256$$

$$0 \times 2^{-5} = 0.0$$

$$0 \times 2^7 = 0$$

$$1 \times 2^{-6} = 0.0156$$

$$0 \times 2^6 = 0$$

$$1 \times 2^{-7} = 0.0078$$

$$1 \times 2^5 = 32$$

$$1 \times 2^4 = 16$$

$$R = 4915.77344_{(10)}$$

$$0 \times 2^3 = 0$$

$$0 \times 2^2 = 0$$

$$1 \times 2^1 = 2$$

$$1 \times 2^0 = 1$$

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$$4915$$

7: 10110011001001.110011<sub>(2)</sub>  $\rightarrow$  Octal

$$1 \times 2^{13} = 8192$$

0

$$1 \times 2^{11} = 2048$$

$$1 \times 2^{10} = 1024$$

0

0

$$1 \times 2^7 = 128$$

$$1 \times 2^6 = 64$$

0

0

$$1 \times 2^3 = 8$$

0

0

$$1 \times 2^0 = 1$$

11465

$$11465 \div 8 = 1$$

$$1433 \div 8 = 1$$

$$179 \div 8 = 3$$

$$22 \div 8 = 6$$

$$16 \div 8 = 2$$

$$1 \times 2^{-1} = 0.5$$

$$1 \times 2^{-2} = 0.25$$

0

0

$$1 \times 2^{-5} = 0.031$$

$$1 \times 2^{-6} = 0.015$$

$$1 \times 2^{-7} = 0.0078$$

$$0.8046875$$

$$0.80469 \times 8 = 6$$

$$0.43752 \times 8 = 3$$

$$0.50016 \times 8 = 4$$

$$R = 26311.634_{(8)}$$



8 = 1000011100001010.0100<sub>(2)</sub> → Hexadecimal

$$1 \times 2^{15} = 32768$$

0

0

0

0

$$1 \times 2^{10} = 1024$$

$$1 \times 2^9 = 512$$

$$1 \times 2^8 = 256$$

0

0

0

0

$$1 \times 2^3 = 8$$

0

$$1 \times 2^1 = 2$$

0

$$\underline{\quad\quad\quad} \\ 34570$$

$$34570 \div 16 = 10$$

$$2160 \div 16 = 0$$

$$135 \div 16 = 7$$

$$128 \div 16 = 8$$

$$0 \times 2^{-1} = 0.0$$

$$1 \times 2^{-2} = 0.25$$

0

0

$$1 \times 2^{-5} = 0.0312$$

$$1 \times 2^{-6} = 0.0156$$

$$\underline{\quad\quad\quad} \\ 0.2968$$

$$0.2968 \times 16 = 4$$

$$0.75 \times 16 = 12$$

$$0.00 \times 16 = 0$$

$$0.02 \times 16 = 0$$

$$R = 870A.4C00_{(16)}$$

9. - 111000 000 111000.00110011<sub>(2)</sub> → Octa/11

$$1 \times 2^{14} = 16384$$

$$1 \times 2^{13} = 8192$$

$$1 \times 2^{12} = 4096$$

0

0

0

0

0

0

$$1 \times 2^5 = 32$$

$$1 \times 2^4 = 16$$

$$1 \times 2^3 = 8$$

0

0

0

28728

$$28728 \div 8 = 0$$

$$3591 \div 8 = 7$$

$$448 \div 8 = 0$$

$$56 \div 8 = 0$$

$$56 \div 8 = 7$$

0

0

$$1 \times 2^{-3} = 0.125$$

$$1 \times 2^{-4} = 0.0625$$

0

0

$$1 \times 2^{-7} = 0.007$$

$$1 \times 2^{-8} = 0.0039$$

$$0.199218$$

$$0.19922 \times 8 = 1.5937$$

$$0.59376 \times 8 = 4.75$$

$$0.75 \times 8 = 6.00$$

$$R = 70070.146_{(8)}$$

9

10: 1001001000111000110001<sub>(2)</sub> → Hexadecimal

$$1 \times 2^{22} = 4194304$$

0

$$1 \times 2^{19} = 524288$$

0

0

$$1 \times 2^{16} = 65536$$

0

0

0

$$1 \times 2^{12} = 4096$$

$$1 \times 2^{11} = 2048$$

$$1 \times 2^{10} = 1024$$

0

0

0

$$1 \times 2^6 = 64$$

$$1 \times 2^5 = 32$$

$$1 \times 2^4 = 16$$

0

0

0

$$1 \times 2^0 = 1$$

$$4791409$$

$$0.2^{-1} = 0.0$$

0

$$1 \times 2^{-3} = 0.125$$

$$1 \times 2^{-4} = 0.062$$

$$1 \times 2^{-5} = 0.03125$$

$$1 \times 2^{-6} = 0.0$$

$$1 \times 2^{-7} = 0.0$$

0

$$1 \times 2^{-9} = 0.001$$

$$R = 491(71.387)_{(16)}$$



11- 701527.233<sub>(8)</sub> → Decimal

$$7 \times 8^3 = 229376$$

0

$$1 \times 8^3 = 512$$

$$5 \times 8^2 = 320$$

$$2 \times 8^1 = 16$$

$$7 \times 8^0 = 7$$

230231

$$0.233$$

$$2 \times 8^{-1} = 0.25$$

$$3 \times 8^{-2} = 0.04$$

$$3 \times 8^{-3} = 0.0058$$

$$\underline{0.3027}$$

$$R = 230231.3027$$

12-21032135.657<sub>(8)</sub> → Binary

$$(2 \times 8^7) + (1 \times 8^6) + (3 \times 8^5) + (2 \times 8^4) + (1 \times 8^3) + (3 \times 8^2) + (5 \times 8^1) + (7 \times 8^0) \\ = 4469853_{(10)}$$

$$4469853 \div 2 = 1$$

$$2234926 \div 2 = 0$$

$$1117463 \div 2 = 1$$

$$558731 \div 2 = 1$$

$$279365 \div 2 = 1$$

$$139682 \div 2 = 0$$

$$69841 \div 2 = 1$$

$$34920 \div 2 = 0$$

$$17460 \div 2 = 0$$

$$8730 \div 2 = 0$$

$$4365 \div 2 = 1$$

$$2182 \div 2 = 0$$

$$1091 \div 2 = 1$$

$$545 \div 2 = 1$$

$$272 \div 2 = 0$$

$$(6 \times 8^{-1}) + (5 \times 8^{-2}) + (7 \times 8^{-3})$$

$$= 0.841$$

$$0.841 \times 2 = 1$$

$$0.683 \times 2 = 1$$

$$0.367 \times 2 = 0$$

$$0.734 \times 2 = 1$$

$$R = 10001000011010001011$$

$$101.1101_{(2)}$$

13-1234567.765<sub>(8)</sub> → Hexadecimal

$$(1 \times 8^6) + (2 \times 8^5) + (3 \times 8^4) + (4 \times 8^3) + (5 \times 8^2) + (6 \times 8^1) + (7 \times 8^0) \\ = 342391_{(10)}$$

$$342391 \div 16 = 7$$

$$21399 \div 16 = 7$$

$$1337 \div 16 = 9$$

$$83 \div 16 = 3$$

$$80 \div 16 = 5$$

$$(7 \times 8^{-1}) + (5 \times 8^{-2}) + (6 \times 8^{-3}) = 0.9698$$

$$0.9698 \times 16 = 15$$

$$0.431 \times 16 = 6$$

$$0.999 \times 16 = 15$$

$$R = 53977.F6F$$

14-4563241.345<sub>(8)</sub> → Decimal

$$(4 \times 8^6) + (5 \times 8^5) + (6 \times 8^4) + (3 \times 8^3) + (2 \times 8^2) + (4 \times 8^1) + (1 \times 8^0) \\ = 1238689_{(10)}$$

$$(3 \times 8^{-1}) + (4 \times 8^{-2}) + (5 \times 8^{-3}) = 0.4472$$

$$R = 1238689.4472$$



15 = 6573142.554<sub>(10)</sub> → Hexadecimal

$$(6 \times 8^6) + (5 \times 8^5) + (7 \times 8^4) + (3 \times 8^3) + (1 \times 8^2) + (4 \times 8^1) + (2 \times 8^0) \\ = 1767010_{(10)}$$

$$1767010 \div 16 = 2$$

$$110438 \div 16 = 6$$

$$6902 \div 16 = 6$$

$$431 \div 16 = 15$$

$$26 \div 16 = 10$$

$$16 \div 16 = 1$$

$$R = 1AF662.B60$$

$$0.7109375_{(10)}$$

$$0.71094 \times 16 = 11$$

$$0.3750 \times 16 = 6$$

$$0.010 \times 16 = 0$$

16: EAO15.3B7<sub>(16)</sub> → Decimal

$$(14 \times 16^4) + (10 \times 16^3) + (1 \times 16^2) + (5 \times 16^1) = 958485$$

$$(3 \times 16^{-1}) + (11 \times 16^{-2}) + (7 \times 16^{-3}) = 0.230712$$

$$R = 958485.2307_{(10)}$$

17: A012(.9B)<sub>(16)</sub> → Binary

$$(10 \times 16^4) + (1 \times 16^3) + (2 \times 16^2) + (12 \times 16^1) = 655660$$

$$655660 \div 2 = 327830$$

$$0.608 \times 2 = 1.216$$

$$327830 \div 2 = 163915$$

$$0.216 \times 2 = 0.432$$

$$163915 \div 2 = 81957$$

$$0.432 \times 2 = 0.864$$

$$81957 \div 2 = 40978$$

$$0.864 \times 2 = 1.728$$

$$40978 \div 2 = 20489$$

$$20489 \div 2 = 10244$$

$$R = 101000000000$$

$$10244 \div 2 = 5122$$

$$100101100.1001$$

$$5122 \div 2 = 2561$$

$$1011_{(2)}$$

18.  $1990C.207_{(16)} \rightarrow \text{Octal}$

$$(1 \times 16^4) + (9 \times 16^3) + (C \times 16^2) + (12 \times 16^0)$$

$$= 104716$$

$$104716 \div 8 = 4$$

$$13089 \div 8 = 1$$

$$1636 \div 8 = 4$$

$$204 \div 8 = 4$$

$$25 \div 8 = 1$$

$$24 \div 8 = 3$$

$$0.207 = 0.12670898$$

$$0.1267 \div 8 = 1$$

$$0.016 \div 8 = 0$$

$$R = 314414.1007_{(8)}$$

19.  $E(118.3D2)_{(16)} \rightarrow \text{Decimal}$

$$(14 \times 16^4) + (12 \times 16^3) + (1 \times 16^2) + (1 \times 16^1) + (8 \times 16^0)$$

$$= 966936$$

$$(3 \times 16^{-1}) + (13 \times 16^{-2}) + (2 \times 16^{-3}) = 0.2387$$

$$R = 966936.2387_{(10)}$$



20. 21A4F<sub>16</sub> (E3<sub>16</sub>) → Octal

$$(2 \times 16^4) + (11 \times 16^3) + (10 \times 16^2) + (4 \times 16^1) + (15 \times 16^0) \\ = 137807$$

$$137807 \div 8 = 17225$$

$$17225 \div 8 = 2153$$

$$2153 \div 8 = 269$$

$$269 \div 8 = 33$$

$$33 \div 8 = 4$$

4

$$0.805 \times 8 = 6$$

$$0.443 \times 8 = 3$$

$$0.546 \times 8 = 4$$

$$R = 415117.634_{(8)}$$