**Algebra Abstracta - Euclides**

**1 ------------------------------------------------------------------------------------------------------------------**

A = 412 && B = 260 && R = ¿? R = mod(412,260) = 152

A = 412 && B = 260 && R = 152 A = B y B = R // R = mod(260,152) = 108

A = 260 && B = 152 && R = 108 A = B y B = R // R = mod(152,108) = 44

A = 152 && B = 108 && R = 44 A = B y B = R // R = mod(108,44) = 20

A = 108 && B = 44 && R = 20 A = B y B = R // R = mod(44,20) = 4

A = 44 && B = 20 && R = 4 A = B y B = R // R = mod(20,4) = 0

A = 20 && B = 4 && R =0 R == 0 return B;

**2 ------------------------------------------------------------------------------------------------------------------**

R > B/2 -> R = B-R

A = 412 && B = 260 && R = 152 152 > 130 -> R = 260-152 = 108

A = 260 && B = 152 && R = 108 108 > 76 -> R = 152 -108 = 44

A = 152 && B = 108 && R = 44 44 < 56 -> A = B y B = R // R = mod(108,44) = 20

A = 108 && B = 44 && R = 20 20 < 24 -> A = B y B = R // R = mod(44,20) = 4

A = 44 && B = 20 && R = 4 4 < 10 -> A = B y B = R // R = mod(20,4) = 0

A = 20 && B = 4 && R =0 R == 0 return B;

**3 ------------------------------------------------------------------------------------------------------------------**

A = 412 && B = 260 A = B y B = mod(412,260) = 152

A = 260 && B = 152 A = B y B = mod(152,108) = 44

A = 152 && B = 108 A = B y B = mod(108,44) = 20

A = 108 && B = 44 A = B y B = mod(44,20) = 4

A = 44 && B = 20 A = B y B = mod(20,4) = 0

A = 20 && B = 4 B == 0 return B;

**4 ------------------------------------------------------------------------------------------------------------------**

A = 412 && B = 260 R = ¿? A es par y B es par -> A = A/2 y B = B/2 y R = R\*2

A = 206 && B = 130 R = 2\*¿? A es par y B es par -> A = A/2 y B = B/2 y R = R\*2

A = 103 && B = 65 R = 2\*2\*¿? A no es par y B no es par -> A = (A-B)/2 = 19

A = 19 && B = 65 A < B -> switch( A,B )

A = 65 && B = 19 A no es par y B no es par -> A = (A-B)/2 = 23

A = 23 && B = 19 A no es par y B no es par -> A = (A-B)/2 = 2

A = 2 && B = 19 A es par y B no es par -> A = A/2

A = 1 && B = 19 A < B -> switch( A,B )

A = 19 && B = 1 A no es par y B no es par -> A = (A-B)/2 = 2

A = 9 && B = 1 A no es par y B no es par -> A = (A-B)/2 = 2

A = 4 && B = 1 A es par y B no es par -> A = A/2

A = 2 && B = 1 A es par y B no es par -> A = A/2

A = 1 && B = 1 A no es par y B no es par -> A = (A-B)/2 = 2

A = 0 && B = 1 A < B -> switch( A,B )

A = 1 && B = 0 B == 0 -> return R = 2\*2\*A = R = 2\*2\*1 = 4

**5 -------------------------------------------------------------------------------------------------------------------**

X = 412 && Y = 260 G = 1 X es par y Y es par -> A = A/2 y B = B/2 y G = G\*2

X = 206 && Y = 130 G = 2 X es par y Y es par -> A = A/2 y B = B/2 y G = G\*2

T = |a-b|/2

X = 103 && Y = 65 G = 4 19 X != 0 X > Y -> X = T

X = 19 && Y = 65 G = 4 23 X != 0 Y > X -> Y = T

X = 19 && Y = 23 G = 4 2 X != 0 X > Y -> X = T

X = 19 && Y = 2 G = 4 X no es par e Y es par -> Y = Y/2

X = 19 && Y = 1 G = 4 9 X != 0 X > Y -> X = T

X = 9 && Y = 1 G = 4 4 X != 0 X > Y -> X = T

X = 4 && Y = 1 G = 4 X es par e Y no es par -> X = X/2

X = 2 && Y = 1 G = 4 X es par e Y no es par -> X = X/2

X = 1 && Y = 1 G = 4 0 X != 0 X = Y -> X = T

X = 0 && Y = 1 G = 4 0 X == 0 return G.Y= 4\*1= 4

**6 ------------------------------------------------------------------------------------------------------------------**

A = 412 && B = 260 A > B -> A = A-B

A = 152 && B = 260 B > A -> B = B-A

A = 152 && B = 108 A > B -> A = A-B

A = 44 && B = 108 B > A -> B = B-A

A = 44 && B = 64 B > A -> B = B-A

A = 44 && B = 20 A > B -> A = A-B

A = 24 && B = 20 A > B -> A = A-B

A = 4 && B = 20 B > A -> B = B-A

A = 4 && B = 16 B > A -> B = B-A

A = 4 && B = 12 B > A -> B = B-A

A = 4 && B = 8 B > A -> B = B-A

A = 4 && B = 4 A = B -> return A;

**7 ------------------------------------------------------------------------------------------------------------------**

A = 412 && B = 260 && R = mod(412,260) = 152 // A = B y B = R

A = 260 && B = 152 && R = mod(260, 152) = 108 // A = B y B = R

A = 152 && B = 108 && R = mod(152, 108) = 44 // A = B y B = R

A = 108 && B = 44 && R = mod(108, 44) = 20 // A = B y B = R

A = 44 && B = 20 && R = mod(44, 20) = 4 // A = B y B = R

A = 20 && B = 4 && R = mod(20, 4) = 0 R == 0 return B;