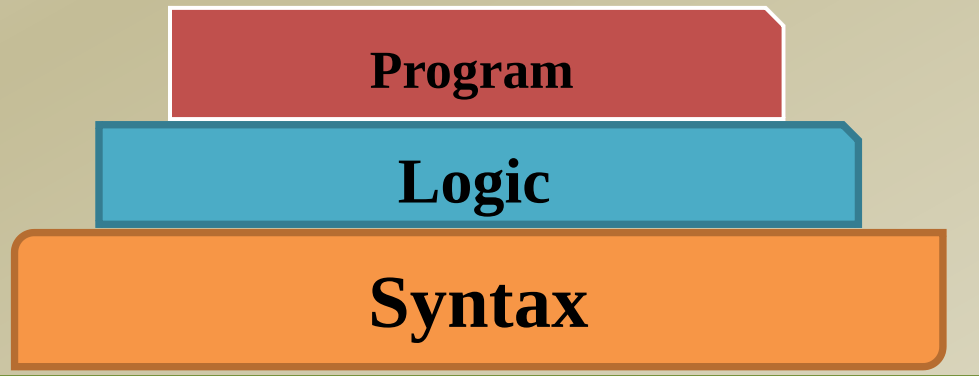
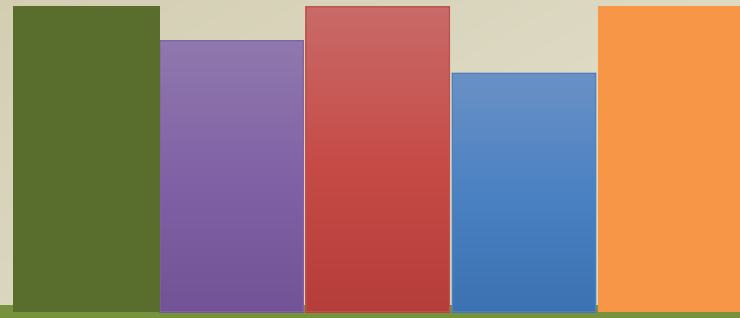
Code at Random (OPC) PVT. LTD.

Program to find HCF and LCM of two numbers





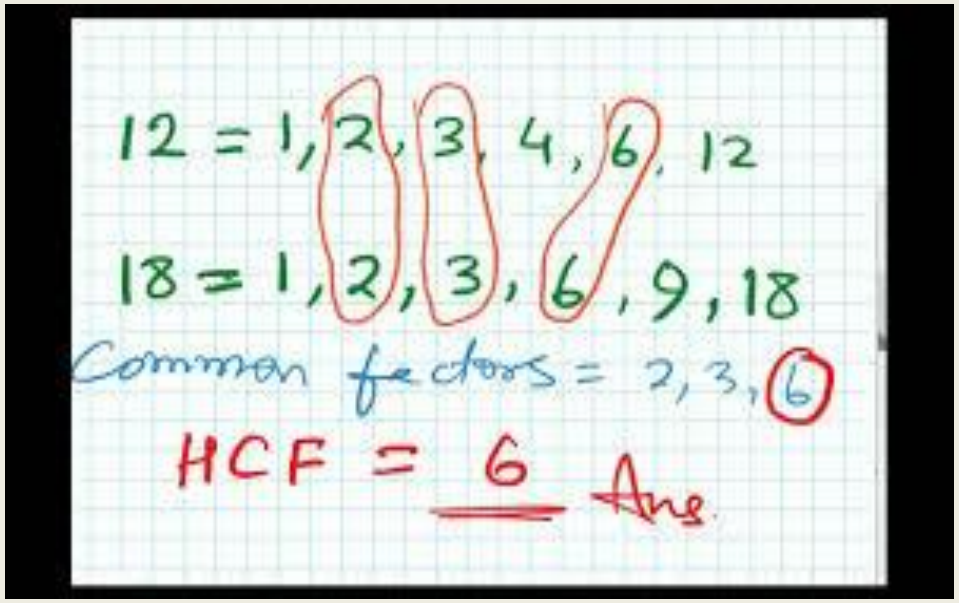
What is HCF??

- HCF stands for ***Highest common factor.**
- HCF can also be said as ***greatest common divisor.**
- HCF is The greatest number which divides each of the two or more numbers.

or

- The HCF or GCD of two integers is the largest integer that can exactly divide both numbers (without a remainder).

Finding hcf in mathematics



Example 1

36 = 2 x 2 x 3 x 3
60 = 2 x 2 x 3 x 5

GCD = Multiplication of common factors
= 2 x 2 x 3
= 12

Example 2

Algorithm of finding GCD of two numbers

- ✓ Step 1 → Define two variables - A, B
- ✓ Step 2 → Find the smallest number of the given A and B and store the smaller number in a separate variable sm
- ✓ Step 3 → Set loop from 1 to sm(smaller of a & b)
- ✓ Step 4 → Check if both are completely divided by same loop number, if yes, store it
- ✓ Step 5→ Display the stored number is HCF

Example of finding gcd using algorithm

- ✓ If A= 16 and b=20
- ✓ SM=16 and loop will move from 1 to 16
- ✓ NOW, we know the first common factor of 16 and 20 is 1.
- ✓ It will get stored in the variable let's say hcf=1;
- ✓ Now, after second iteration, i=2 then also hcf get initialized as hcf=2.
- ✓ Similarly, loop goes on till 16, and the last common factor is 4.
- ✓ So, finally hcf gets initialized as 4 and it will get displayed

Final Program

```
import java.util.*;
class hcf
{
    public static void main(String[] Args)
    {
        int a,b,i,sm,hcf=0;
        Scanner sc= new Scanner(System.in);
        System.out.println("Enter two numbers");
        a= sc.nextInt();
        b= sc.nextInt();
        sm = (a<b)?a:b;
        for(i=1;i<=sm;i++)
            {
                if(a%i==0&&b%i==0)
                {
                    hcf= i;
                }
            }
      lcm =
            System.out.println("HCF is "+hcf);
       }
}
```