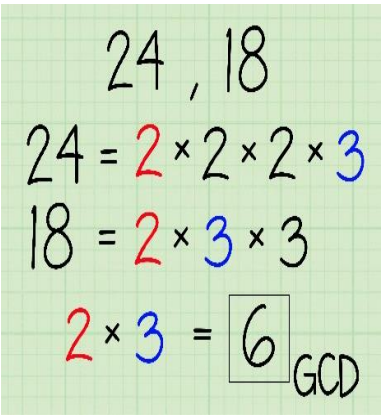
Series: Introduction to python
Presentation: conditions and loops Lecture :1
Editing by : Dr. Shiple

1.	Write a code to print prime numbers: • **Step 1:** Check if the number is even (reminder % 2 = 0) • **Step 2:** Take the sum of the digits of that number. If the sum is divisible by 3, the number is not a prime number. • **Step 3:** After confirming the falsity of steps 1 and 2, find the square root of the given number. • **Step 4:** Divide the given number by all the prime numbers below its square root value. • **Step 5:** If the number is divisible by any of the prime numbers less than its square root, it is not a prime number; otherwise, it is prime.
2.	Given a five digit integer, print the sum of its digits. 10564 →16
3.	Write a program that prints a table of all the Roman-numeral equivalents of the decimal numbers in the range 1 to 100. **Roman Numerals: 1 - 1000** I V X L C D M 1 5 10 50 100 500 1000 1 I, 2 II, 3 III, 4 IV, 5 V, 6 VI, 7 VII, 8 VIII, 9 IX, 10 X 11 X1, 20 XX, 30 XXX, 40 XL, 50 L, 60 LX, 70 LXX, 80 LXXX, 90 XC, 100 C 200 CC, 300 CCC, 400 CD, 500 D, 600 DC, 700 DCC, 800 DCCC, 900 CM, 1000 M, 1001 MI
4.	Write a program to display the multiplication table for given number n: Test Data : n=1 *Expected Output* : 1x1 = 1, 2x1 = 2, 3x1 = 3, 4x1 = 4, 5x1 = 5, 6x1 = 6, 7x1 = 7, 8x1 = 8

5. Write a code to find greatest common divisor of two numbers (iteratively):

Definitions :-

(GCD) of two or more integers, which are not all zero, is the largest positive integer that divides each of the integers.



Algorithm **Greatest Common Divisor (I).**
Input. Two positive integers a and b greater than zero.
Output. The greatest common divisor (a, b).

1. While $(b > 0)$ do
   1.1 $r \leftarrow a \pmod{b}$
   1.2 $a \leftarrow b$
   1.3 $b \leftarrow r$
2. Return(a).

6. (Bar-Chart Printing Program) One interesting application of computers is drawing graphs and bar charts. Write a program that reads five numbers (each between 1 and 30). For each number read, your program should print a line containing that number of adjacent asterisks.
For example,
If your program reads the number seven, it should print *******.

7. Print a pattern of numbers from 1 to n as shown below. Each of the numbers is separated by a single space.

```
5 5 5 5 5 5 5 5 5
5 4 4 4 4 4 4 4 5
5 4 3 3 3 3 3 4 5
5 4 3 2 2 2 3 4 5
5 4 3 2 1 2 3 4 5
5 4 3 2 2 2 3 4 5
5 4 3 3 3 3 3 4 5
5 4 4 4 4 4 4 4 5
5 5 5 5 5 5 5 5 5
```

```
4 4 4 4 4 4 4
4 3 3 3 3 3 4
4 3 2 2 2 3 4
4 3 2 1 2 3 4
4 3 2 2 2 3 4
4 3 3 3 3 3 4
4 4 4 4 4 4 4
```

```
2 2 2
2 1 2
2 2 2
```

8. Write a program to draw different next patterns.