

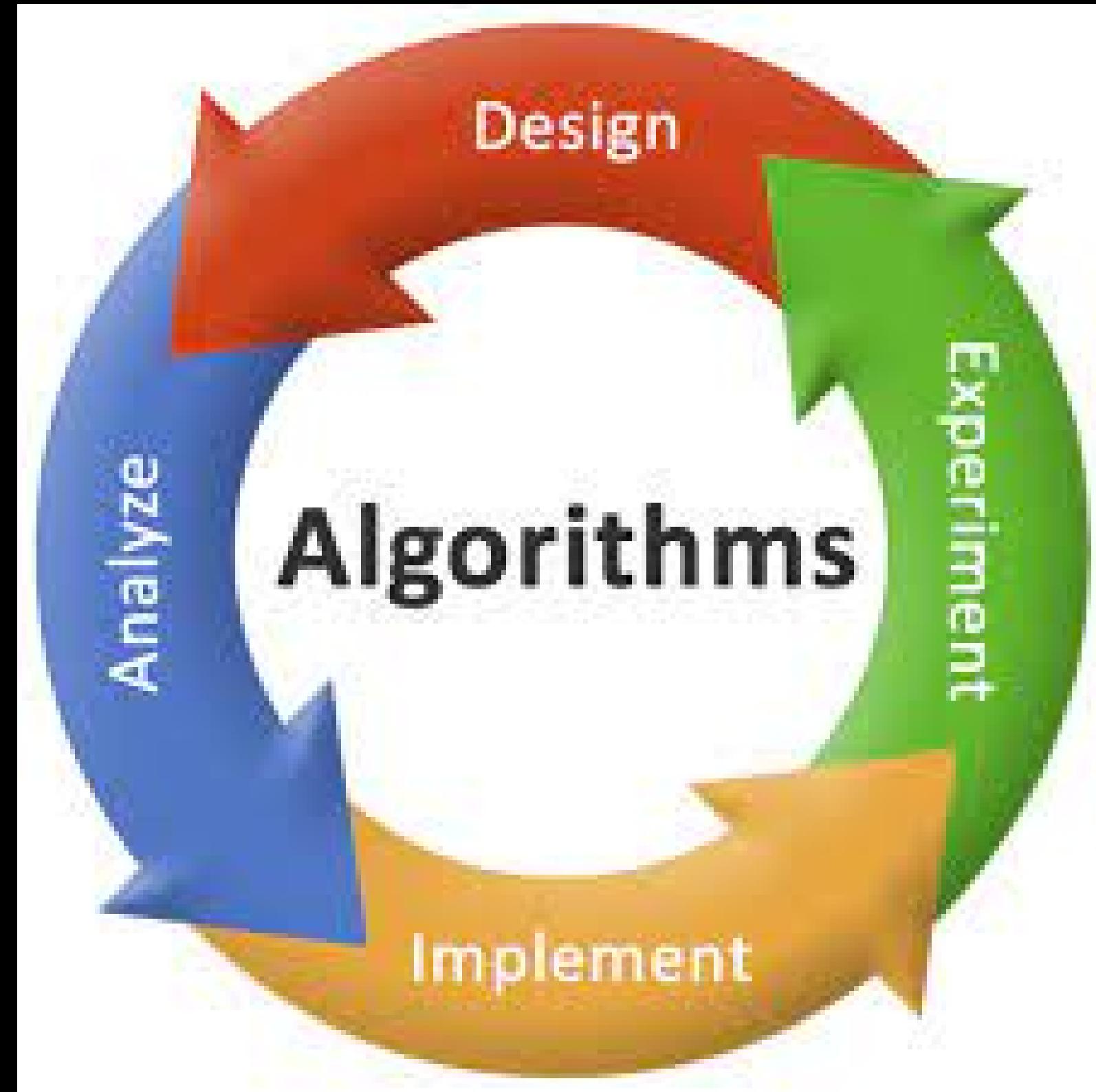
14TH DAY

LET'S RECAP

keep calm
wear mask&
and study.

ISSUED IN PUBLIC INTEREST

Algorithms



What is an algorithm?

**It is a finite sequence
of steps to achieve
a task by computer.**

Real world example

making a cup of tea

- 1.Put the teabag in a cup.
- 2.Fill the kettle with water.
- 3.Boil the water in the kettle.
- 4.Pour some of the boiled water into the cup.
- 5.Add milk to the cup.
- 6.Add sugar to the cup.
- 7.Stir the tea.
- 8.Drink the tea.

ALGORITHM IN CODING
IN CODING WE ALSO NEED
TO WRITE MANY
INSTRUCTIONS
(STATEMENTS) IN
PARTICULAR ORDER TO GET
THE TASK DONE

A simple linear search algorithm

Used to check if
a particular item exists or not

Demo Example

Characteristics
of an
Algorithm

1. Input specified
2. Output specified
3. Definiteness
4. Effectiveness
5. Finiteness
6. Independent

Analysis of Algorithms:

priori

without actually running
the program, and
measuring
theoretically

posterior

By actually running
the program and
measuring
using time

Algorithm

Complexity

We measure running time of an **algorithm**

Time (CPU Time)

Space (RAM Memory)

CPU and Memory are two important
resources of the computer system

Demo Example

Fast Prime Check

Algorithm

Algorithms
are being written from
ancient time

Why call it **algorithm**?

Muhammad ibn Mūsā al-Khwārizmī

- Persian Mathematician
- influential works in mathematics, astronomy, and geography.



Lets discuss some more algorithms

Demo Example #1

Decimal To Binary

$$12 \Rightarrow (1100)$$

Demo Example #2

Check Anagram

racecar => acercar

ALGORITHMS

However, in modern times we
have so
many algorithms to do
anything.

Some common examples of algorithms we see in real life

1. shortest path finding algorithms
2. matrix multiplication algorithm
3. square root finding algorithm
4. linear equations solver
5. sodoku solver algorithm

Demo Example #3

**SQUARE ROOT
APPROXIMATION
ALGORITHM**
(by Heron of Alexendria
of ancient Greece)

THANK
YOU