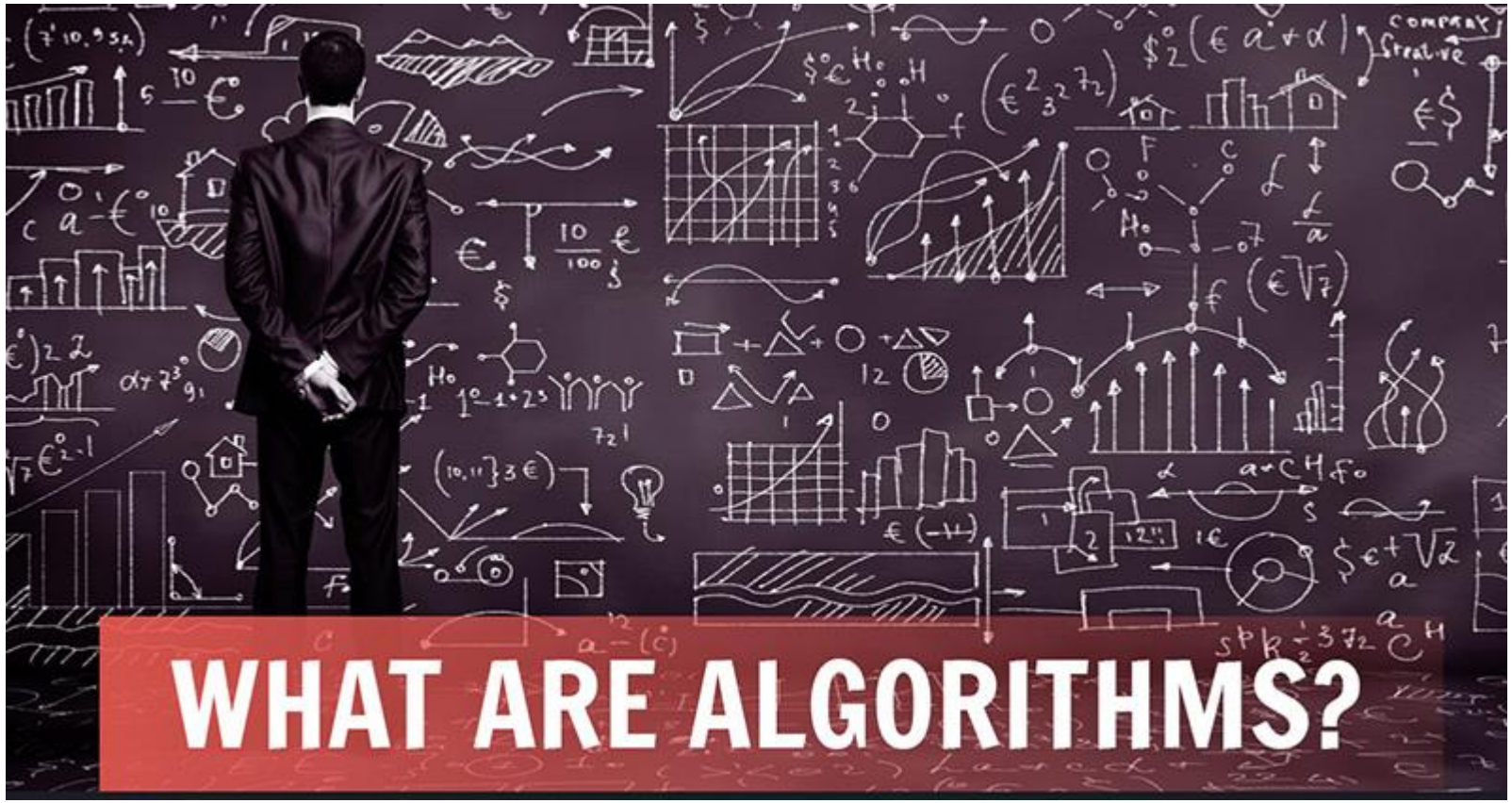
Session 2_1

# Algorithms



# Learning objectives

To learn and appreciate the following concepts

✓Introduction to algorithms

✓Algorithms for simple problems

# Session outcome

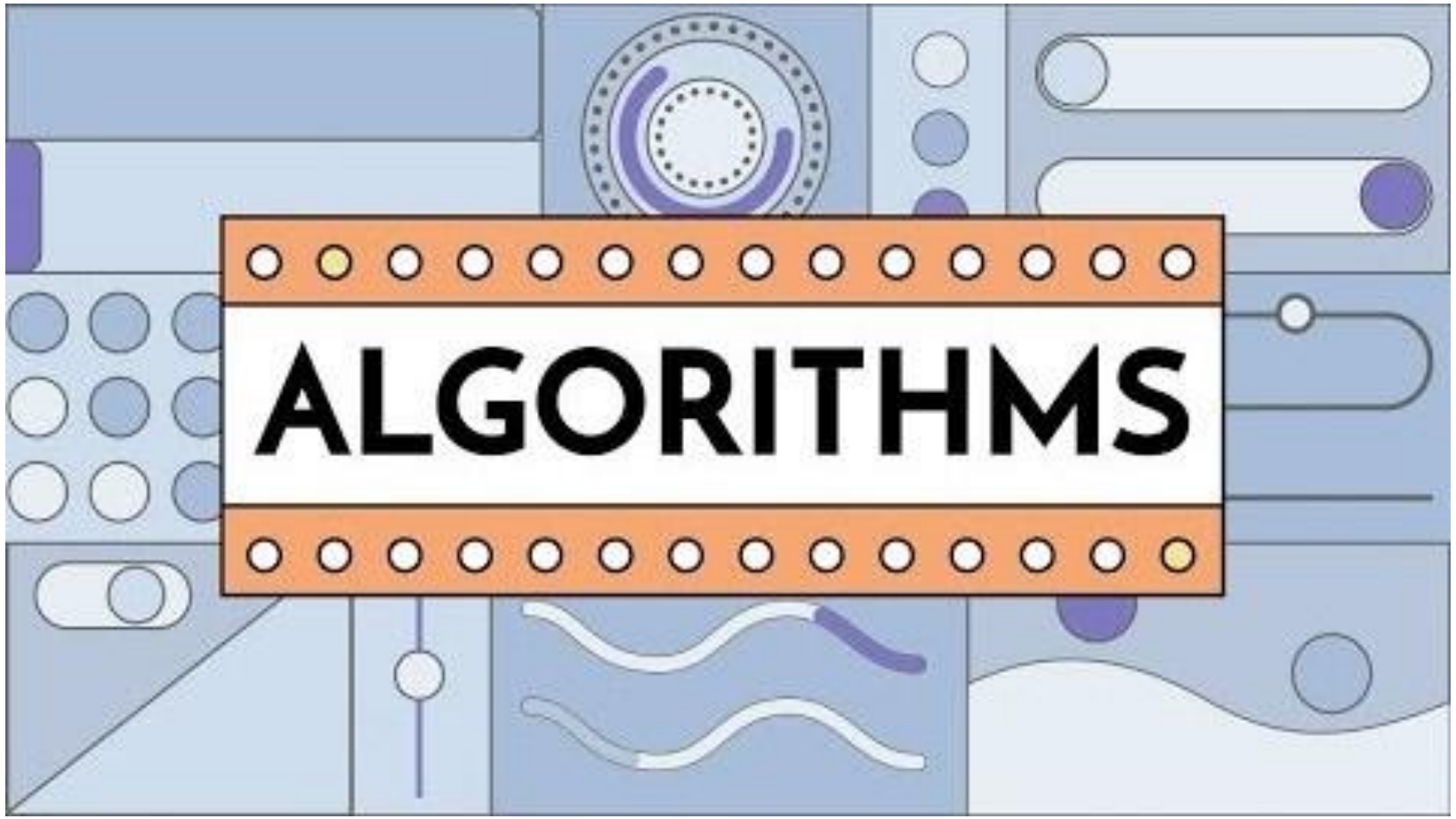
- ✓At the end of session the student will be able to write
  - ✓Algorithms for simple problems

# Algorithm

- ✓A step by step procedure to solve a particular problem
- ✓Named after Arabic Mathematician Abu Jafar Mohammed Ibn Musa

  **Al Khowarizmi**

# Relevance of an algorithm to Computer Science




**URL:** https://www.youtube.com/watch?v=kM9ASKAni_s

# Algorithmic Notations

- **Name of the algorithm** [mandatory]

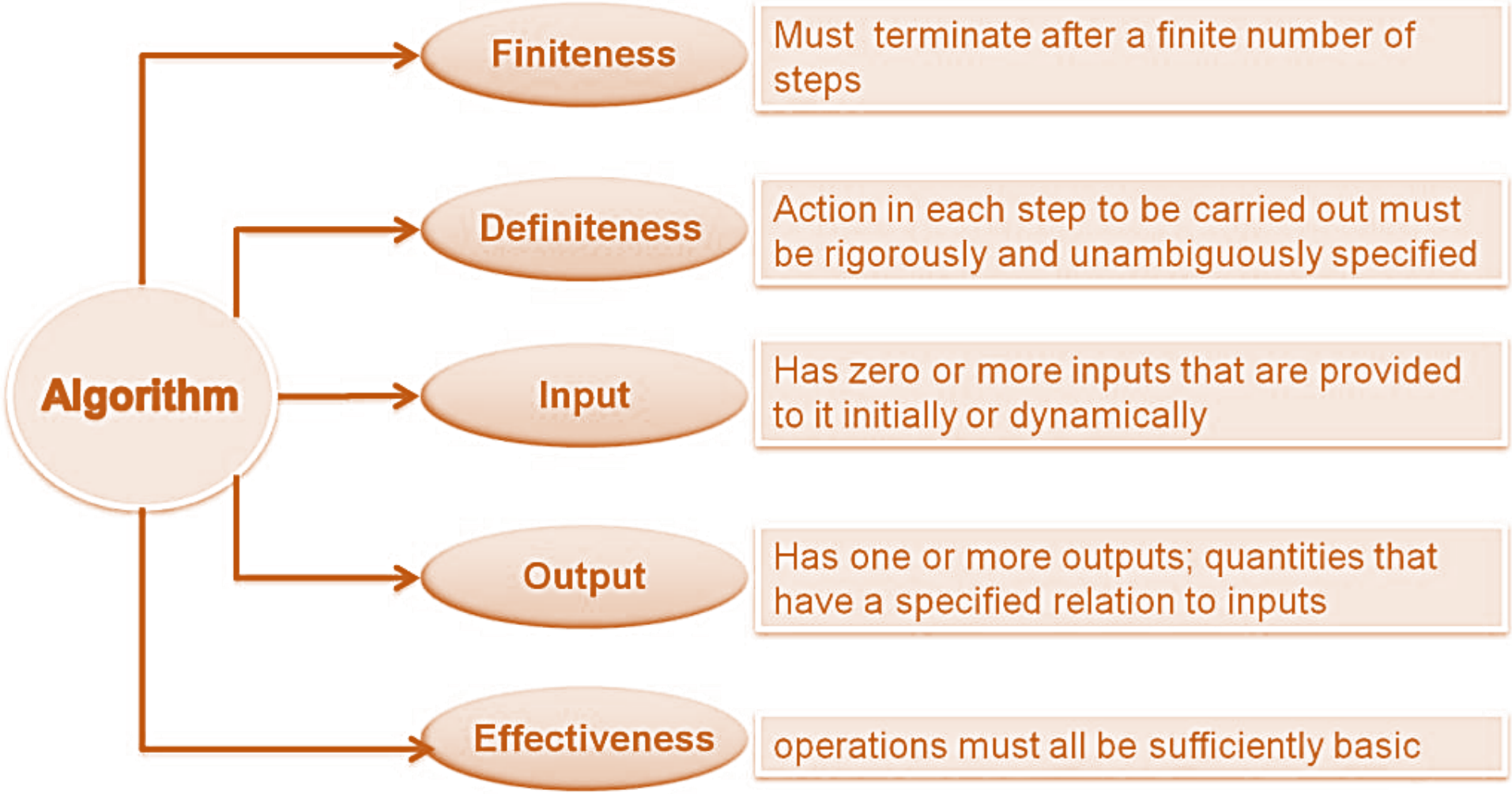
  [gives a meaningful name to the algorithm based on the problem]
- **Start** [Begin of algorithm]
- **Step Number** [mandatory]

  [indicate each individual simple task]
- **Explanatory comment** [optional]

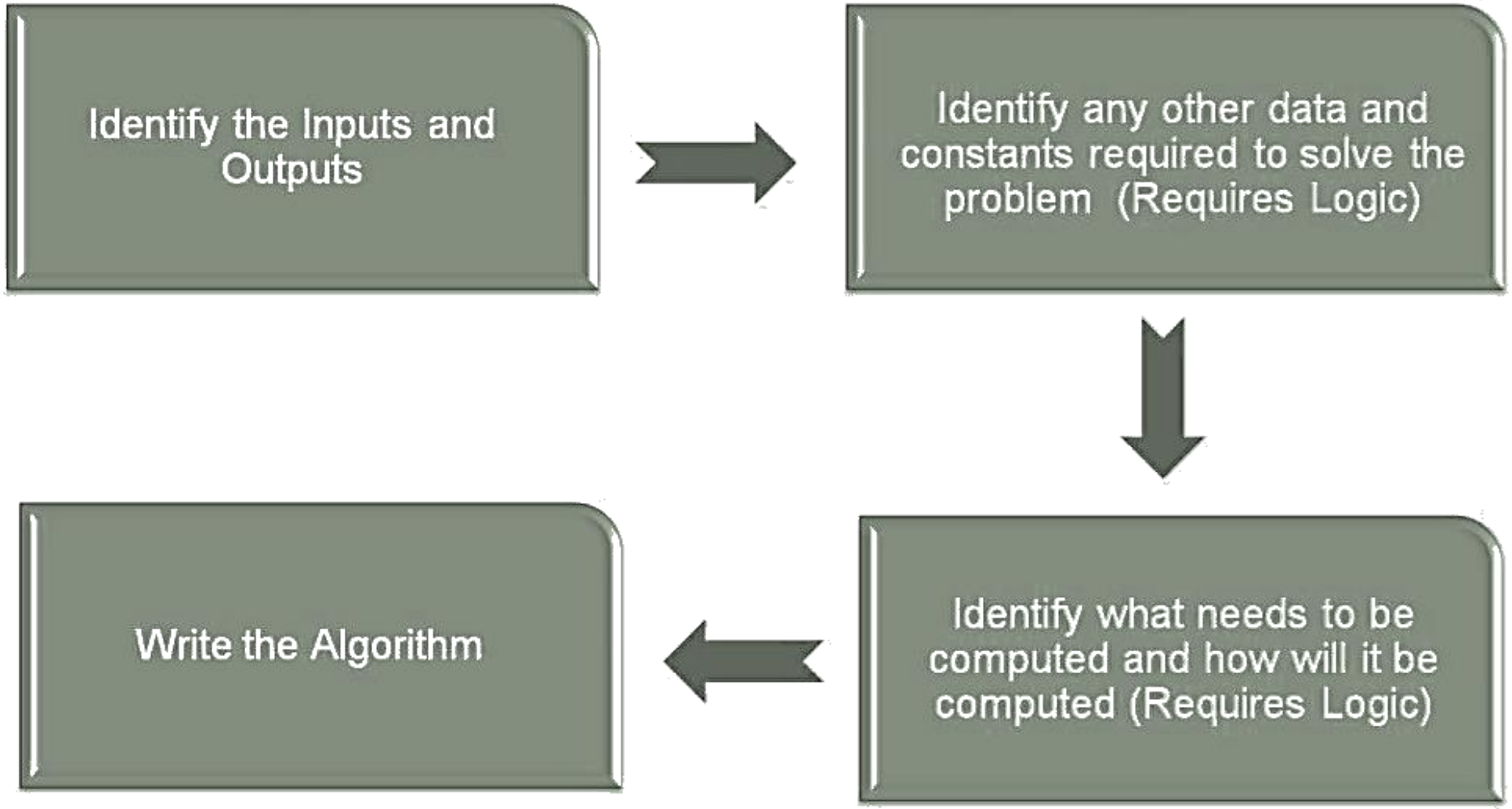
  [gives an explanation for each step, if needed]
- **Termination** [mandatory]

  [tells the end of algorithm]

# Properties of an algorithm



# Steps to develop an algorithm



# Algorithm to compute the area of circle!!!

Name of the algorithm : Compute the area of a circle

Step1: Start

Step 2: Input radius

Step 3: [Compute the area]

Area ← 3.1416 * radius * radius

Step 4: [Print the Area]

Print 'Area of a circle =', Area

Step 5: [End of algorithm]

Stop

# Algorithm to Interchange values of two variables!!!

Name of the algorithm: Interchange values of 2 variables

Step 1: Start

Step 2: Input A,B

Step 3: temp ← A

Step 4: A←B

Step 5: B←temp

Step 6: Print ‘A=’ , A

Print ‘B=’ , B

Step 7: [End of Algorithm]

Stop


Go to posts/chat box for the link to the question

**submit your solution in next 2 minutes**

**The session will resume in 3 minutes**

# Algorithm to find largest of 3 numbers!!!

Name of the algorithm: Find largest of 3 numbers
Step 1: Start
Step 2: [Read the values of A, B and C]
Read A, B, C

Step 3: [Compare A and B]
if A>B Go to step 5

Step 4: [Otherwise compare B with C]
if B>C then
Print 'B' is largest'
else
Print 'C' is largest'
Go to Step 6

Step 5: [Compare A and C for largest]
if A>C then

Print 'A' is largest'
else

Print 'C' is largest'
Step 6: [End of the algorithm]
Stop

# What's great about algorithm!!! Think

- By developing a good understanding of a large range of algorithms, you will be able to choose the right one for a problem and apply it properly.

# Tutorial on Algorithms

- Write an algorithm to add, subtract, multiply and divide two integers
- Write an algorithm to swap values of two variables without using a third variable