SNS COLLEGE OF ENGINEE

Kurumbapalayam(Po), Coimbatore – 641 107
Accredited by NAAC-UGC with 'A' Grade
Approved by AICTE, Recognized by UGC & Affiliated to Anna Univer

Department of Artificial Intelligence an

Course Name: 23ITB201 Data structures a

II Year / III semester

Unit I – Abstract Data types

Topic: Abstract Data types

ABSTRACT DATA TYPES

Data Types (ADTs)

ADT of Mo

Abstrac

- Ram capacity
- Processor Spee
- LCD screen siz
- Dual Camera
- Android

Opera

- Call()
- Messaging()
- Photo()
- Video()

tract data types are the entities that are definitions of data and

ot have implementation details.

inition of ADT only mentions what operations are to be perfor

se operations will be implemented.

ed “abstract” because it gives an implementation-independent

...ata types

...us data structures that can be used for ADT are

...rray

...nked list

...ack

...eue

...ees

...aphs etc.,

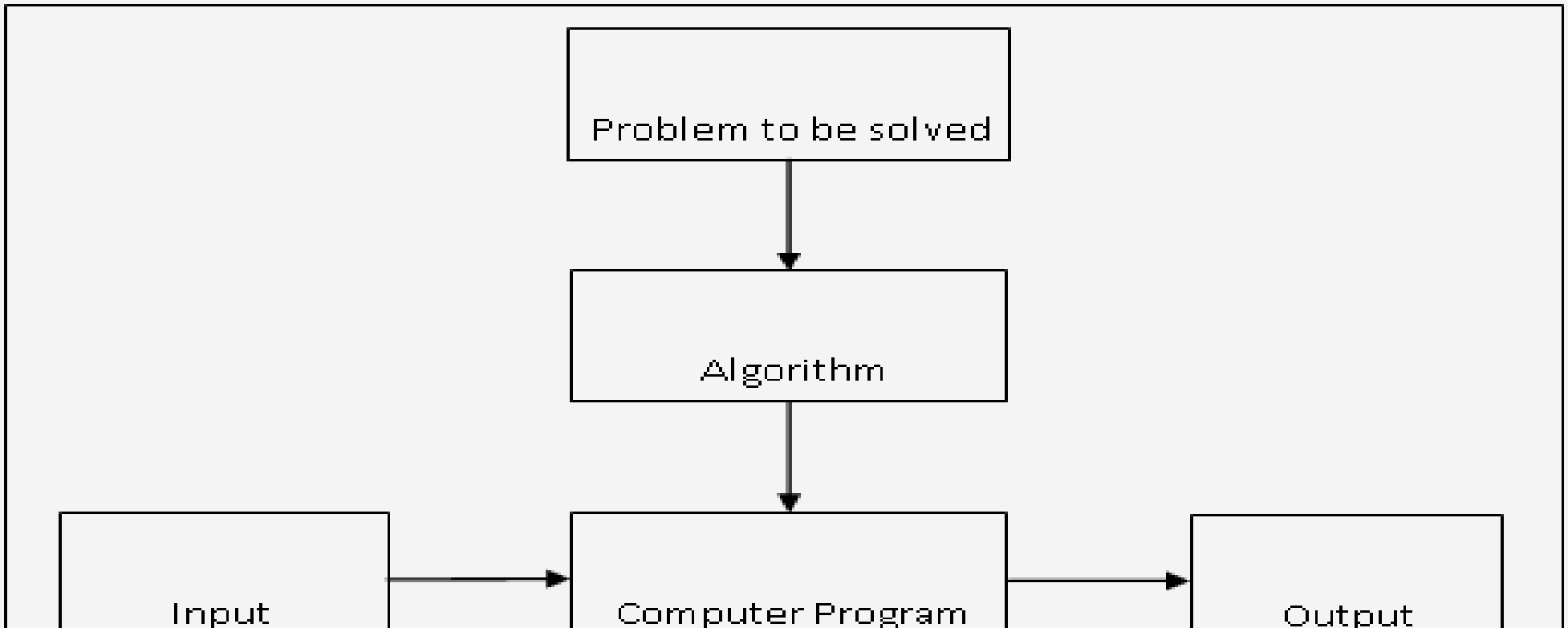
What is abstract data type?

ADT of smart watch

Introduction to analysis of algorithm

AN ALGORITHM

m is a sequence of unambiguous instructions for solving a pr
g a required output for any legitimate input in a finite amount
by step procedure with the input to solve the problem in a finit
in the required output.



...duction to analysis of algorithm

f the algorithm illustrates some important points:

mbiguity requirement for each step of an algorithm cannot b

sed.

of inputs for which an algorithm works has to be specified ca

algorithm can be represented in several different ways.

exist several algorithms for solving the same problem.

s for the same problem can be based on very different ideas an

m with dramatically **different speeds.**

roduction to analysis of algorithm

ics of an algorithm:

/ more quantities are externally supplied.

At least one quantity is produced.

Each instruction is clear and unambiguous.

If the instructions of an algorithm is traced then for all cases t

es after a finite number of steps.

Every instruction must be very basic and runs in short time.

...duction to analysis of algorithm

...an algorithm:

... a procedure. It has two parts; the first part is head and the second part i...

...on consists of keyword Algorithm and Name of the algorithm with para...
...p1, p2,…,p3)

...lso has the following:

...ion:

...n algorithm various programming constructs like if, for, while and som...
...ed.

...statements may be enclosed with { and } brackets. if, for, while can be ...
...espectively. Proper indention is must for block.

...duction to analysis of algorithm

written using // at the beginning.

hould begin by a letter and not by digit. It contains alpha numeric letters

ta types.

←" used as assignment operator. E.g. v←10

ors (TRUE, FALSE), Logical operators (AND, OR, NOT) and Relation

>=,=, ≠, <>) are also used.

ut can be done using read and write.

else condition, branch and loop can be also used in algorithm.

Introduction to analysis of algorithm

mmon divisor(GCD) of two nonnegative integers m and n (not-

n), is defined as the largest integer that divides both m and n ev

o.

m for computing gcd(m, n) in simple steps

eturn the value of m as the answer and stop; otherwise, proce

by n and assign the value of the remainder to r.

e value of n to m and the value of r to n. Go to Step 1.

Introduction to analysis of algorithms

m for computing gcd(m, n) expressed in pseudocode

Euclid_gcd(m, n)

m, n) by Euclid's algorithm

negative, not-both-zero integers m and n

st common divisor of m and n

–n

/hat are the properties of an algorithm?

ist the steps involved in writing an algorithm?