



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal - 500 043, Hyderabad, Telangana

COURSE HANDOUT

Course Code	ACSC13
Course Name	Design and Analysis of Algorithms
Class / Semester	IV SEM
Section	A-SECTION
Name of the Department	CSE-CYBER SECURITY
Employee ID	IARE11023
Employee Name	Dr K RAJENDRA PRASAD
Topic Covered	Algorithm Introduction
Course Outcome/s	Understand the concept of algorithms and design steps of an algorithm
Handout Number	1
Date	20 March, 2023

Content about topic covered : Algorithm Introduction, Characteristics of Algorithm, Design Steps of an Algorithm

Definition of an Algorithm

The term "algorithm" has evolved to refer to a specific procedure that may be carried out by a computer in order to solve a problem.

An algorithm is made up of a sequence of steps, each of which may need one or more operations in order to solve the task or problem.

Definition:

A finite set of instructions known as an algorithm is used to complete a certain task. A step-by-step process to solve a specific problem is what is meant by an algorithm.

Design Steps of an Algorithm:

The study of algorithms covers many significant topics. There are maybe five different study areas that stand out:

1. How to devise algorithm:

Algorithm design strategies are applied for solving the problem in a better way; these strategies are as follows: divide-and-conquer, greedy method, branch and bound, dynamic programming etc. Type of design strategy play a vital role in the study of an algorithm.

2. How to express algorithm:

The "movement" of structured programming is focused on expressing algorithms in a programming language in a clear and concise manner.

3. How to validate algorithm

It is verified that whether an algorithm produces correct output for all the possible inputs. This process is known as the algorithm validation.

4. How to analyse algorithm

An algorithm uses the CPU (central processing unit) of the computer to carry out operations and memory (both immediate and auxiliary) to store the programme and its data as it is being run.

Analysis of algorithm is nothing but determines the time and space requirements for the completion of program execution of an algorithm

5. How to test a program

Testing a program really consists of two phases: debugging and profiling.

Debugging is the process of executing programs on sample data sets to determine if faulty results occur and, if so, to correct them

Profiling is the process of executing a correct program on data sets and measuring the time and space it takes to compute the results