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# Assignment - 1

1) Define Algorithm. How algorithm differs from flow chart?

Ans An algorithm is a process or a set of rules to be followed to achieve desired output, especially by a computer.

- Algorithm is a step-by-step process while flowchart is a block-by-block process.
- Algorithm is complex to understand while flowchart is easy
- It takes more time to create an algorithm compared to a flowchart
- Algorithm uses natural language while flowchart uses pictorial format.
- Algorithm is procedure for solving problems while flowchart is a graphic representation of a process.

2) What is vector? Which operations are performed on vector?

Ans Vector mean denoting a type of graphical representation using lines to construct the outline of objects

- It can also be defined as a quantity having direction as well as magnitude, especially as determing the position of

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one point in space relative to other.
- Following operations can be performed on vectors:
  1. Addition ($\vec{a} + \vec{b}$)
  2. Substraction ($\vec{a} - \vec{b}$)
  3. Multiplication ($a.b$, $a \times b$)
- The sum of a vectors is a third vector, represented as the diagonal of the parallelogram constructed with the two original vectors as side.
- When a vector is multiplied with a scalar i.e. number its magnitude is multiplied to scalar and direction is same where as if scalar is negative direction is reversed.
- Dot product and ~~cross~~ cross product are also known as type of multiplication of vectors.
- Thus, above mentioned operations can be performed on vector.

3) List types of Algorithms.

Ans There are eight types of Algorithm which is given below:

- Simple recursive algorithms
- Backtracking algorithms
- Divide and conquer algorithms

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- Dynamic programming algorithms
- Greedy algorithms
- Branch and bound algorithms
- Brute force algorithms.
- Randomized algorithms.

4. Discuss key characteristic of algorithm.

Ans The key characteristics of algorithm is given below:

- Precision: Each step of an algorithm must be precisely defined.
- Input: An algorithm accepts zero or more inputs.
- Output: An algorithm must generate at least one desirable output.
- Finiteness: An algorithm must always terminate after a finite number of steps.
- Effectiveness: All the operations to be performed in the algorithm must be essential and sufficiently basic.
- Generality: The algo. should be expressed in a generic form and must be applicable to a set of all possible inputs.