

Victoria University of Bangladesh
Department of computer Science & Engineering

Name: Ashit Kumar

Student ID: 2221220011

Program: B.Sc. in (CSE)

Final Examination

Semester: Spring - 2023

Batch: 22nd (Evening)

Course Code: CSI-227

Course Title: Algorithms.

Answer to the question no: 1 (a)

1. (a) Ans: As we study algorithms, we can learn analysis techniques that allow us to compare and contrast solutions based solely on their own characteristics, not the characteristics of the program or computer used to implement them.

1. (a) Ans: Applications of Algorithms

Arranging a particular type of data in a sequential arrangement: Storing contacts on our phone, storing speech signals, in speech processing etc.

Implementing stack and queue.

Adjacency matrix representation of graphs.

(2)

Answer to the question no: 1 (b)

1. (b) Answer Dataflow of algorithm: Dataflow analysis is a process for collecting information about the use, definition and dependencies of data in programs. The dataflow analysis algorithm operates on a CFG, generated from an AST. You can use a CFG to determine the parts of a program to which a particular value assigned to a variable might propagate.

1. (b) Answer Between Algorithm and Pseudocode: Algorithm and Pseudocode are the two related terms in computer programming. The basic difference between algorithm and pseudocode is that an algorithm is a step-by-step procedure developed to solve a problem, while a pseudocode is a technique of developing an algorithm.

P.T.O.

Answer to the question no: 1(c)

1. (c) Ans: Types of Algorithms: The seven types of algorithms are the brute force-based algorithms
 (1) Greedy Algorithm. (2) Recursive Algorithm.
 (3) Backtracking Algorithm. (4) Divide and Conquer Algorithm. (5) Dynamic programming Algorithm and
 (6) Randomized Algorithm.

1. (c) Ans: Greedy Algorithms A greedy algorithm is an approach for solving a problem by selecting the best option available at the moment. It doesn't worry whether the current best result will bring the overall optimal result. The algorithm never reverses the earlier decision even if the choice is wrong. It works in a top-down approach.

(4)

Answer to the question no: 2(a)

2. (a) Ans: Searching Algorithm: A search algorithm is the step-by-step procedure used to locate specific data among a collection of data. It is considered a fundamental procedure in computing. In computer science, when searching for data, the difference between a fast application and a slower one often lies in the use of the proper search algorithm.

Ans: Sorting Algorithm: A sorting algorithm is a method for reorganizing a large number of items into a specific order, such as alphabetical, highest-to-lowest value or shortest-to-longest distance. Sorting algorithms take lists of items as input data, perform specific operations on these lists and deliver ordered arrays as output.

⑤

Answer to the question no: 2 ②

2. (c) Ans: Mathematical Algorithm: A procedure for solving a mathematical problem (as of finding) the greatest common divisor) in a finite number of steps that frequently involves repetition of an operation. broadly: a step-by-step procedure for solving a problem or accomplishing some end.

Graph Algorithms: A graph is an abstract notation used to represent the connection between pairs of objects. A graph consists of - vertices - inter connected objects in a graph are called vertices. Vertices are also known as nodes. Edges - Edges are the links that connect the

Answer to the question no: 2 (c)

2 (c) Ans: Divide and conquer algorithm: This Paradigm, divide-and-conquer, breaks a problem into subproblems that are similar to the original problem, recursively solves the subproblems, and finally combines the solutions to the subproblems to solve the original problem.

Answer to the question no: 2 (b)

2 (b) Ans: Function of an Algorithms: Algorithms are essentially problem-solvers - their purpose is to solve and often automate a solution to a particular problem. Introductory textbooks on algorithms tend to outline their subject broadly, defining an algorithm as 'a set of steps to accomplish a task'.