



ECE 217: Data Structure and Algorithm – Fall 2022: Theoretical Assignment 1

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Note – Cheating and Plagiarism: Cheating and plagiarism are not permitted in any form and cause certain penalties. The instructor reserves the right to fail culprits.

Deliverable: All your responses to the assignment questions should be included in a single compressed file to be uploaded in the Gannon University (GU) – Blackboard Learn environment.

Question. Consider the following items:

- Provide comprehensive explanations for definitions, applications, and differences of Algorithm, Program, and Data Structure.
- Specify the Design Goals for “Data Structure and Algorithm” and “Implementation”.
- Mention the name of the first mathematician who created the concept of Algorithm and the name of scientist who was pioneered in the concept of Automation.
- Determine the similarities and differences between Algorithm, System, and Algorithmic System.
- Explain the similarities and differences between insertion of a data sample in a sorted and an unsorted array.
- Specify the software and hardware parameters that affect the running time of an algorithm.
- Fill out the question mark in the following figure based on each case of “Algorithm, Program, and Data Structure” and provide a real-world example for this computing flow.

