

# Data Structures and Algorithms<sup>1</sup>

A Study Guide for Students of Sorsogon State  
University - Bulan Campus<sup>2</sup>

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<sup>1</sup>A course in the Bachelor of Science in Computer Science

<sup>2</sup>This book is a study guide for students of Sorsogon State University - Bulan Campus taking up the course Data Structures and Algorithms.

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# Preface

*“Bad programmers worry about the code. Good programmers worry about data structures and their relationships.”*

– Linus Torvalds

Jarrian Vince G. Gojar

<https://github.com/godkingjay>



# 1

# Introduction to Data Structures and Algorithms

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### 1.1.4 Testing the Installation

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##### 4.2.1.1 Types of Binary Trees

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Right-skewed Binary Tree

Complete Binary Tree

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8.2.2 Greedy Algorithms

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## 9

# Applications of Data Structures and Algorithms

## 9.1 Applications in Computer Science

9.1.1 Operating Systems

9.1.2 Database Management Systems

9.1.3 Compiler Design

9.1.4 Networking

9.1.5 Artificial Intelligence

9.1.6 Machine Learning

9.1.7 Computer Graphics

9.1.8 Computer Vision

9.1.9 Robotics

9.1.10 Web Development

9.1.11 Mobile Development

9.1.12 Game Development

9.1.13 Cybersecurity

9.1.14 Quantum Computing

## 9.2 Applications in Real Life

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9.2.2 E-commerce

9.2.3 Healthcare

9.2.4 Finance

9.2.5 Transportation

9.2.6 Education

9.2.7 Agriculture

9.2.8 Manufacturing

9.2.9 Entertainment

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