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Guide to Assembly Language: A Concise Introduction

By James T. Streib

INTRODUCTION

This guide is designed to enable readers to quickly begin programming in assembly language. Through hands-on programming exercises and examples, you will gain a deeper understanding of the computer architecture of the Intel 32-bit processor and the relationship between high-level and low-level languages. This textbook serves as an ideal introduction for undergraduate students and a concise reference for professionals seeking to write logically correct programs efficiently.

GETTING STARTED

To effectively utilize this guide, it is recommended to engage with the material actively. The book is structured to facilitate practical learning:

- **Overview of Assembly Language:** Begin by understanding the fundamental concepts and the introduction to general-purpose registers.
- **Hands-on Programming:** Each chapter includes complete programs and exercises. It is crucial to work through these examples to solidify your understanding.
- **Chapter Summaries:** Utilize the provided chapter summaries for quick review and reinforcement of key concepts.

LEARNING APPROACH AND KEY TOPICS

The book covers a comprehensive range of topics essential for assembly language programming:

- **Basic Instructions:** Covers input/output operations, fundamental arithmetic instructions, selection structures, and iteration structures.
- **Advanced Instructions:** Introduces logic, shift, arithmetic shift, rotate, and stack instructions.
- **Procedures and Macros:** Discusses the implementation and use of procedures and macros to organize code.

- **Data Structures:** Examines arrays and strings within the context of assembly language.
- **Machine Language:** Investigates machine language from a discovery perspective, providing insight into low-level operations.

TIPS FOR EFFECTIVE LEARNING

To maximize your learning experience and address potential difficulties:

- **Practice Regularly:** Consistent practice with the programming examples and exercises is vital for mastering assembly language concepts.
- **Understand the 'Why':** Focus not just on how to write code, but also on understanding the underlying computer architecture and why certain instructions are used.
- **Review C Code Comparisons:** The book often pairs C code with Assembly code. Analyzing these comparisons can provide valuable insights into the relationship between high-level and low-level languages.
- **Utilize Appendices:** The five appendices provide supplementary information that can be helpful for reference and deeper understanding.

PRODUCT OVERVIEW

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Image: Front cover of the book 'Guide to Assembly Language: A Concise Introduction'. The cover features a blue and white color scheme with the title and author's name clearly visible. This visual representation helps in identifying the correct edition of the book.

SPECIFICATIONS

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