

# CIS 103 Fundamentals of Programming

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## Research and Writing Assignment

Due Date: 09/27/2024 @ 11:59pm

### Instructions:

Each question below requires a written response of approximately 300-500 words. You are expected to research the topic, cite any sources used, and write your answers in your own words.

### Questions:

#### 1. The Importance of Code Semantics in Programming

Research and explain why coding semantics are critical in programming. Discuss how following proper coding standards and semantic rules impacts the readability, maintainability, and functionality of software projects. Provide examples from real-world programming languages, like Python or Java, to illustrate your points.

#### 2. Version Control Systems: Benefits and Best Practices

Research the role of version control systems (e.g., Git) in software development. Write about the benefits they offer for both individual developers and teams, and explain some best practices when using version control systems, especially in collaborative environments. Include an overview of how GitHub can enhance these processes.

#### 3. Data Structures in Python: Lists vs. Dictionaries

Write an in-depth comparison of lists and dictionaries in Python. Discuss their similarities, differences, and when it is most appropriate to use each. Provide specific examples that highlight the advantages of using lists for certain operations versus dictionaries for others.

#### 4. The Role of Functions in Writing Efficient Code

Research how functions contribute to more efficient, reusable, and maintainable code. Discuss the concept of 'modularity' and explain why breaking down a program into smaller, reusable functions is a good programming practice. Include examples from Python that demonstrate this concept.

### Submission Instructions:

Write your responses in a well-structured format, using paragraphs and appropriate subheadings.

Cite all your sources using APA or MLA format.

Submit your document on Brightspace by the due date.