

**10-1 Journal: Reflecting on Key Learnings and Future Applications**

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CS-500: Introduction to Programming

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Throughout this course, I have grown in ways I didn't expect when I first began Introduction to Programming. The programming process demands both logical thinking and patient work alongside detailed attention and regular problem-solving abilities from students who study Computer Science at the master's level. The course instruction helped me develop developer-like thinking abilities. The course taught me to divide complicated problems into smaller workable sections while I developed my ability to fix code problems through persistent effort.

The process of efficient error debugging proved to be my most difficult learning challenge. During the first part of the semester, I wasted numerous hours attempting to identify program execution problems which turned out to be basic syntax errors. The combination of loops and pseudocode to Python syntax translation proved difficult for me to understand. The Codio platform became difficult to use because small programming errors would trigger a complete program failure. I solved my programming difficulties through repeated attempts and practice sessions. I developed new skills by adding print statements for code tracking and testing individual sections and studying lecture materials when I needed help. The repeated practice of these methods transformed me into a self-assured programmer who could solve problems independently.

The experience has established my approach for future academic work and professional development. My upcoming Computer Science classes will help me develop my programming abilities while I study data structures and databases and algorithms. My career path will start with IT work before I move into data analysis as a Data Analyst position. The ability to write code and test it and debug it will prove essential when I start

working on data-driven projects and developing automation scripts and analyzing Python datasets in the future.

My ability to use programming principles and best practices in my work has developed significantly since the start of the course. The menu-based calculator and modular arithmetic projects allowed me to develop clean code through variable naming and logical structure and comment addition. I dedicated my time to validate inputs because it helped me stop errors from happening and made sure my programs handled user input correctly. The practice of modularity and decomposition allowed me to divide my programs into smaller functions which simplified both debugging and testing processes. Through continuous program testing and analysis of successful and unsuccessful elements I developed skills to create functional code that remains easy to maintain.

The course demonstrated that programming success emerges from continuous effort rather than achieving flawless results. Every programming failure and error message provided me with new knowledge to acquire. I now code with increased patience and curiosity and self-assurance because I understand that testing and learning from mistakes forms an essential part of the development process. The developed mindset will help me succeed in upcoming computer science classes and professional advancement in technology industry.