

**Narrative:** Shape Monster Game

**Description:**

The Shape Monster Game is a text-based educational game designed to help children practice reading by collecting shapes in different classrooms while avoiding the Shape Monster. In this game, players go through different rooms in a school to collect different shapes, all while avoiding the lurking Shape Monster. The goal is to gather the necessary shapes and return to the main office without encountering the monster, making the game both challenging and educational. The game started off simple which allowed me to focus on my coding skills and provided a platform for further enhancement. Over time, I integrated several advanced features to improve the game's functionality and showcase my growing technical abilities.

To demonstrate my proficiency in multiple programming languages, I first converted the game from Python to C++. When I did this, I had to completely rework the code to make sure that it was functional and compatible with the new language. I also incorporated Object-Oriented Programming (OOP) principals by adding the Game class. This made the game easier and easier to understand but also shows that I understand the industry-standard software engineering practices.

**Justification:**

I selected the Shape Monster Game for my ePortfolio because it shows my technical skills, creativity, problem solving skills and my ability to develop educational tools for children. The original game was written in Python, and I later converted it to C++ to demonstrate my versatility in multiple programming languages. The game now incorporates advanced data structures like hash tables and unordered maps, demonstrating my understanding of algorithms

Loren Beck  
CS499  
Narrative  
2/20/2025

and their application. The game includes Object-Oriented Programming (OOP) principles, such as the creation of a Game class for better flow and maintainability. Lastly, it now includes a to-do list featuring CRUD operations which show my ability to manage and manipulate data.

### **Reflection:**

Enhancing the Shape Monster Game helped me with understanding several key areas in software engineering. Originally created in 2022 during my IT-145 class using Python, this text-based educational game was designed to help children practice reading by collecting shapes in different classrooms while avoiding the Shape Monster. The enhancement process involved converting the game to C++, implementing advanced data structures like hash tables and unordered maps, and incorporating a to-do list featuring CRUD operations. After a lot of testing and valuable feedback from my son, several significant changes were made to improve the game. I added a Game class to apply Object-Oriented Programming principles, making the code more organized and maintainable. The Shape Monster, initially confined to the theater, was programmed to appear randomly in different rooms, adding an element of unpredictability. To make the game easier for children, the number-guessing range was adjusted from 1-10 to 1-3. The to-do list was introduced to enhance interactivity and manage tasks related to collecting shapes. These enhancements not only optimized the game's performance and user experience but also showcased my proficiency in multiple programming languages, data structures, software engineering principles, and database management. The project allowed me to fully meet course outcomes related to software engineering, algorithms, and database integration while highlighting my problem-solving abilities and commitment to creating user-friendly educational tools.

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