F1 TRIVIA GAME

USING OOPS WITH C++

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INTRODUCTION

The F1 Trivia Game is a unique quiz developed as a practical demonstration of Object-Oriented Programming (OOP) principles. The game offers an engaging platform for Formula 1 fans to challenge their knowledge in a competitive setting. With two players participating, the game alternates turns, presenting questions in a multiple-choice format and tracking scores in real-time.

This project is designed to emphasize the benefits of OOP in software development, particularly its ability to create modular, reusable, and scalable solutions. Key features include an abstract base class (Question) that defines the general structure for all quiz questions and a derived class (MCQ) that implements specific functionalities. These classes encapsulate the core logic for displaying questions, validating answers, providing explanations, and offering a 50/50 lifeline.

Dynamic memory management plays a significant role in the project, as quiz questions are allocated and deallocated efficiently to optimize resource usage. Furthermore, robust exception handling ensures smooth gameplay by validating user inputs and addressing errors gracefully. The 50/50 lifeline leverages randomization techniques to remove two incorrect answers, adding an element of strategy to the game.

APPLICATION OF OOPS

The use of OOP concepts, including abstraction, encapsulation, inheritance, and polymorphism, proved to be highly effective in simplifying and organizing the program. The Question class, serving as an abstract base class, provided a clear interface for defining quiz questions. The MCQ class, derived from Question, encapsulated question data and implemented functionalities such as displaying questions, validating answers, and providing explanations. This modular design allowed the addition of new question types or features without significant changes to the existing codebase.

OUTPUTS

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Welcome to F1 Quiz Competition!

Enter Player 1's Name: Rahul
Enter Player 2's Name: Akhil

Rahul, Question: Who holds the record for the most Formula 1 World Champion
Options:
A) A) Lewis Hamilton
B) B) Michael Schumacher
C) C) Juan Manuel Fangio
D) D) Alain Prost

Enter your choice (A/B/C/D) or type 'L' for Lifeline: B

Correct Answer! You earn 500 points.

Akhil, Question: Which team did Fernando Alonso win his two World Champions
    ?
Options:
A) A) Ferrari
B) B) McLaren
C) C) Renault
D) D) Red Bull

Enter your choice (A/B/C/D) or type 'L' for Lifeline: L
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OUTPUTS

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You've used the 50/50 lifeline! Here are the remaining options:
Question: Which team did Fernando Alonso win his two World Championships wi
Options:
A)
B) B) McLaren
C) C) Renault
D)

Enter your choice (A/B/C/D): C

Correct Answer! You earn 500 points.

Rahul, Question: Who won the 2020 Formula 1 World Championship?
Options:
A) A) Lewis Hamilton
B) B) Sebastian Vettel
C) C) Max Verstappen
D) D) Valtteri Bottas

Enter your choice (A/B/C/D) or type 'L' for Lifeline: A

Correct Answer! You earn 500 points.

Akhil, Question: In which year did the first Formula 1 race take place?
Options:
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OUTPUTS

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A) A) 1950
B) B) 1947
C) C) 1962
D) D) 1965

Enter your choice (A/B/C/D) or type 'L' for Lifeline: A

Correct Answer! You earn 500 points.

Rahul, Question: Which F1 driver is known as the 'Flying Finn'?
Options:
A) A) Mika Häkkinen
B) B) Kimi Räikkönen
C) C) Valtteri Bottas
D) D) Heikki Kovalainen

Enter your choice (A/B/C/D) or type 'L' for Lifeline: A

Correct Answer! You earn 500 points.

Quiz completed!
Rahul scored: 1500 points
Akhil scored: 1000 points

Congratulations, Rahul wins!
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CONCLUSION

The development of the F1 Trivia Game using Object-Oriented Programming (OOP) principles in C++ has demonstrated a robust and interactive approach to quiz game design. By employing fundamental OOP concepts such as inheritance, polymorphism, encapsulation, and abstraction, the project encapsulates essential functionalities in a modular and maintainable code structure.

The use of dynamic memory allocation and exception handling ensures efficient resource management and user-friendly error feedback. Additionally, features like the 50/50 lifeline and dynamic question presentation showcase the flexibility and scalability of the system.

Thank you!