

Real World Problems on Operator Overloading

1. Create a class for complex numbers and overload '+' and '*' to perform arithmetic operations.
2. Implement a Vector class where '+' adds two vectors and '*' performs scalar multiplication.
3. Design a Matrix class and overload '+' for matrix addition and '*' for matrix multiplication.
4. Build a Time class that overloads '+' to add hours and minutes, and '<' to compare durations.
5. Create a Fraction class and overload '+', '-', '*', '/' for basic fraction arithmetic.
6. Implement a BankAccount class where '+' merges balances and '>' compares account balance.
7. Design a Distance class that supports addition, subtraction, and comparison of distances.
8. Create a Polynomial class and overload '+' and '*' to add and multiply polynomials.
9. Implement a FileSize class where '+' adds sizes and '==' checks equality in bytes.
10. Create a Book class and overload '==' and '<' to compare books by price and title.
11. Build a ShoppingCart class that overloads '+' to add items and '*' to apply discount rates.
12. Design a CurrencyConverter class that adds amounts of different currencies after conversion.
13. Implement a Temperature class and overload '-' for temperature difference and '>' to compare.
14. Create a Rectangle class and overload '==' to compare areas and '+' to merge two rectangles.
15. Build a Score class where '+=' adds new scores and '>' checks high scores.
16. Implement a Playlist class that uses '+' to combine songs and 'len()' to count them.
17. Overload 'in' operator in a custom class to check item presence like a list.
18. Create a GameCharacter class and overload '+' to merge strength or health points.
19. Design an Inventory class that supports '+' to combine items and '-' to remove them.
20. Implement a User class and overload '==' to compare based on email and user ID.