

CSE 102L Computer Programming Laboratory - Generics

Interfaces:

1. Countable

- + getItemCount(): int
Method to return the count of items.

2. IInventory<T extends Countable>

- + add(item: T): None
Method to add an item to the inventory.
- + remove(item: T): None
Method to remove an item from the inventory.
- + getItem(index: int): T
Method to get an item by index from the inventory.

3. Rentable

- + rentItem(renter: Person, startDate: Date, endDate: Date): None
Method to rent an item.
- + isAvailable(): boolean
Method to check if the item is available for rent.

Classes:

1. Person (abstract class)

Details of the Person class.

2. Product (abstract class)

- name: String
Name of the product.
- price: double
Price of the product.
- + Product(name: String, price: double)
Constructor to set the name and price of the product.
- + compareTo(o: Product): int
Method to compare products based on price.
- + toString(): String
Method to return the string representation of the product.

3. Book (concrete class)

- author: String
Author of the book.
- pages: int
Number of pages in the book.
- + Book(name: String, price: double, author: String, pages: int)
Constructor to set the book details.
- + Getters and setters for author and pages.
- + toString(): String
Method to return the string representation of the book.

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4. ColoringBook (concrete class)
 - color: String
Color of the coloring book.
 - + ColoringBook(name: String, price: double, author: String, pages: int, color: String)
Constructor to set the coloring book details.
 - + toString(): String
Method to return the string representation of the coloring book.
 - + isAvailable(): boolean
Method to check if the coloring book is available for rent.
 - + rentItem(renter: Person, startDate: Date, endDate: Date): None
Method to rent the coloring book.
5. Vehicle (abstract class)
 - name: String
Name of the vehicle.
 - price: int
Price of the vehicle.
 - + Vehicle(name: String, price: int)
Constructor to set the vehicle details.
 - + compareTo(o: Vehicle): int
Method to compare vehicles based on price.
 - + toString(): String
Method to return the string representation of the vehicle.
6. Car (concrete class)
 - + Car(name: String, price: int)
Constructor to set the car details.
 - + isAvailable(): boolean
Method to check if the car is available for rent.
 - + rentItem(renter: Person, startDate: Date, endDate: Date): None
Method to rent the car.
7. Item<T extends Comparable<? super T> & Countable> (concrete class)
 - item: T
The item of type T.
 - quantity: int
Quantity of the item.
 - + Item(item: T, quantity: int)
Constructor to set the item and quantity.
 - + compareTo(o: Item<T>): int
Method to compare items based on quantity.
 - + toString(): String
Method to return the string representation of the item.
 - + getItemCount(): int
Method to return the count of items.

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8. Inventory<T extends Comparable<? super T> & Countable> (concrete class)

- items: ArrayList<T>
List of items in the inventory.
- + add(item: T): None
Method to add an item to the inventory.
- + getItem(index: int): T
Method to get an item by index from the inventory.
- + remove(item: T): None
Method to remove an item from the inventory.
- + getItemCount(): int
Method to return the total count of items in the inventory.

9. Rented<T extends Rentable, E extends Person> (concrete class)

- item: T
The rented item.
- renter: E
The renter of the item.
- startDate: Date
Start date of the rental period.
- endDate: Date
End date of the rental period.
- + Rented(item: T, renter: E, startDate: Date, endDate: Date)
Constructor to set the rental details.
- + Getters for item, renter, startDate, and endDate.