Part 1: (20 Points)

Shopping Cart

Please apply your knowledge of Abstract Data Types (ADTs) and dynamic arrays by implementing a shopping cart class. Your implementation will simulate a basic online shopping cart, supporting the following operations that are most likely encountered during online shopping

Shopoing Cart - Functionalities

```
addItem(string name);
//this operation adds the item to the cart.

removeItem(string name);
//removes the item from the shopping cart
//If there are multiple items with the same name,
remove the first occurrence. If no item is found,
please print a message to the user indicating so.

listItems();
//display the items inside the cart.

int getNumOfItems ()
//Function to return the number of items in the
cart.

clearCart ()
//empty the cart

saveCart()
//save the content of the cart to a file in the
hard drive.

Please overload the insertion operator so it can
display the content of the cart.


Feel free to add any additional helper functions
or functionality that you thing is needed.
```

Please pay attention to:

- The initial size of your cart should be 5.
- The cart should double in size whenever the cart is half full.
- Please implement proper memory management to ensure there are no memory leaks.
- Please handle all possible errors appropriately, especially for operations that could fail (eg. Failed memory allocation, removing an item that does not exist, etc..)
- Please write a drive program to test the functionality of your shopping cart program.

Submission Guidelines:

1. All programming must be done in C++
2. Please turn assignment in Canvas before the due date.
3. Please provide Separate Compilation.
4. Please submit one-page report discussing your implementation approach. You can list some of the advantages and disadvantages of your approach.
5. Observe the format of the output.
6. Observe good programming style and practices.
7. Write a driver program to test your code
8. Include screenshot of the output of your program.

========== **End of HW # 2** ==========