Problem Set 5

Exercise 1 – Permutations (2 points)

Write a function called `permute(nums)` which takes an integer list, and returns all possible permutations. For example, if `nums = [1,2,3]`, then `permute(nums)` will return:

```
[[1, 2, 3], [1, 3, 2], [2, 1, 3], [3, 1, 2], [2, 3, 1], [3, 2, 1]]
```

Exercise 2 – `RetailItem` Class (OOP) (1 point)

Write a class named `RetailItem` that holds data about an item in a retail store. The class should store the following data in attributes: item description, units in inventory, and price.

Once you have written the class, write a program that creates three `RetailItem` objects and stores the following data in them:

	Description	Units in Inventory	Price
Item #1	Jacket	12	59.95
Item #2	Designer Jeans	40	34.95
Item #3	Shirt	20	24.95

Exercise 3 – Cash Register(OOP) (2 point)

This exercise assumes that you have created the `RetailItem` class in Exercise 3. Create a `CashRegister` class that can be used with the `RetailItem` class. The CashRegister class should be able to internally keep a list of `RetailItem` objects. The class should have the following methods:

- A method named `purchase_item` that accepts a `RetailItem` object as an argument. Each time the `purchase_item` method is called, the `RetailItem` object that is passed as an argument should be added to the list.
- A method named `get_total` that returns the total price of all the `RetailItem` objects stored in the `CashRegister` object's internal list.
- A method `get_total_items` that returns the total units/numbers of all the

`RetailItem` objects stored in the `CashRegister` object's internal list.

- A method named `show_items` that displays data about the `RetailItem` objects stored in the `CashRegister` object's internal list.
- A method named `clear` that should clear the `CashRegister` object's internal list.

Demonstrate the `CashRegister` class in a program that allows the user to select several items for purchase. When the user is ready to check out, the program should display a list of all the items he or she has selected for purchase, as well as the total price. For example the following items are available for purchasing

```
You have 0 items in your cart
Select which items to purchase, then press 5 to check out.
(1) Jacket ($59.95 each)
(2) Designer Jeans ($34.95 each)
(3) Shirt ($24.95 each)
(4) Clear cart
(5) Checkout
> >? 1
How many jackets do you want?
> >? 2
You have 2 items in your cart
Select which items to purchase, then press 5 to check out.
(1) Jacket ($59.95 each)
(2) Designer Jeans ($34.95 each)
(3) Shirt ($24.95 each)
(4) Clear cart
(5) Checkout
> >? 5
Description | Units in Inventory | Price
Jacket | 2 | $59.95
Your total is 119.90 dollars
```

1. The cashier machine will first display all the items available and ask you to input the item ID that you want to buy. When you input 1, means that you want to buy Jacket.

   Then the system will ask you how many jackets you want to buy. After you input 2, The CashRegister will update your shopping cart by add two jackets.

2. Then the system goes to next cycle by asking you what item you want to add to cart. If you input 5, the checking out process is done.