

- 1 .Define an integer set class named CSet with some memeber functions as follows:
 - 1.1 Multiple elements of the same type can be put in a set.
 - 1.2 IsExist(): To judge if an integer is a member of a set or not;
 - 1.3 IsEqual(): To judge if two sets are equal or not;
 - 1.4 RemoveItem(): To delete an integer from the set;
 - 1.5 Intersection(): To get intersection with another set; (交集)
 - 1.6 Union(): To get union with another set. (并集)
 - 1.7 AddItem(): To add an integer to a set.In this function adds an integer successfully when this integer is NOT in the set and there are enough space to save it in the set.

NOTES:

- (1) The elements of set is unsorted.
- (2) The elements of set cannot be repeated.
- (3) In order to complement CSet class, you may define member functions with available arguments as well as constructor / destrctor if you need.

2. Define a class of CSmart whic`h can print how many objects of CSmart thare are in the program.

```
class CSmart
{ // Here is your codes... };
void DoSomething()
{
    CSmart s;
}
CSmart s1;
void main()
{
    CSmart s2;
    DoSomething();
    CSmart *s3 = new CSmart;
    delete s3;
    s2.~CSmart();
}
```

The outputs of main are as below:

```
1 object
2 objects
3 objects
2 objects
3 objects
2 objects
1 object
0 object
```

3. Create a class, `IntChar`, to achieve an integer to save a string which length is no more than 4. Suppose that a character length is 1 byte.

For example: "Love", its binary form associated with an integer is:

0100 1100 0110 1111 0111 0110 0110 0101

If the string length is less than 4 characters, the remaining part is made up by zero.

NOTES:

- (1) You can define appropriate member functions and variables;
- (2) The string type in C++ is FORBIDDEN in the `IntChar`;
- (3) In main, programmer can call member functions in the following way.

```
void main()
{
    IntChar IC("Love");

    IC.ASC_Print();      // Print the content with string format: Love
    IC.Binary_Print();   // Print the content with binary format:
                        // 0100 1100 0110 1111 0111 0110 0110 0101
    IC.Int_Print();      // Print the content with integer format: 1282373221
}
```

4. 良乡自动售货机里的货品包括饮料、饼干和零食。已知每种货品的单价和数量，输出当前自动售货机中货品的总数和总价。

[OPTIONAL]

5. Define a class of `CLQueue` which holds data with linear structure and connects the last node to the first node.

- 5.1 Define member function, `Add()`, to add an item to `CLQueue`;
- 5.2 Define member function, `Remove()`, to remove an item from `CLQueue`;
- 5.3 Define member function, `Get()`, to get an item at the specified position;

Note: You may define compatible parameters as well as other members you need.