Homework 10

Re-submit Assignment

Due Apr 13 by 11:59pm **Points** 10 **Submitting** a file upload

Develop a template class, **ShiftArray** that has following features.

- template parameters are data type and size of array.
- Overload operator []
- member function **circshift(int n)** that circularly shifts the elements in the array by **n** positions.
  - **n** is a int type.
  - If **n** is positive, shift elements towards right.
  - If **n** is negative, shift elements towards left.
- For example :

  1 2 3 4 5 Initial array elements

  5 1 2 3 4 **circshift(1)**

  1 2 3 4 5 **circshift(-1)**

  4 5 1 2 3 **circshift(2)**

Use code below to test your class:

```
int main(int argc, char **argv)
{
    // test int
    ShiftArray<int,3> a;
    a[0] = 21;
    a[1] = -12;
    a[2] = 103;
    for (int j = 1 ; j < 5 ; j++){
        a.circshift(j);
        for (int i = 0 ; i < 3 ; i++){
            std::cout << a[i] << " ";
        }
        std::cout << std::endl;
    }
    // test char
    ShiftArray<char,20> mes;
    for (int i = 0 ; i < 20 ; i++){
        mes[i] = '_';
    }
    mes[0] = 'H';
    mes[1] = 'e';
    mes[2] = 'l';
```

```
    mes[3] = 'l';
    mes[4] = 'o';
    for (int j = 0 ; j < 20 ; j++){
        for (int i = 0 ; i < 20 ; i++){
            std::cout << mes[i];
        }
        std::cout << std::endl;
        mes.circshift(-1);
    }
    return 0;
}
```

output will be:

```
103 21 -12
21 -12 103
21 -12 103
103 21 -12
Hello_______________
ello_______________H
llo______________He
lo_____________Hel
o____________Hell
_____________Hello
_____________Hello_
____________Hello__
___________Hello___
__________Hello____
_________Hello_____
________Hello______
_______Hello_______
______Hello________
_____Hello_________
____Hello__________
___Hello___________
__Hello____________
_Hello_____________
```