Assignment 13

Due 16 December 11:59pm

1   Problem 1

Integers 0..31

Define a class that will hold the *set* of integers from 0 to 31. An element can be set with the `set` member function and cleared with the `clear` member function. It is not an error to `set` an element that's already set or `clear` an element that's already clear. The function `test` is used to tell whether an element is set.

Member functions:

```
void small_set::set(int item); /* Set an element in the set */
void small_set::clear(int item); /* Clear an element in the set */
int small_set::test(int item); /* See whether an element is set */
```

Sample usage:

```
small_set a_set;
a_set.set(3); /* Set contains [3] */
a_set.set(5); /* Set contains [3,5] */
a_set.set(5); /* Legal! Set still contains [3,5] */

cout << a_set.test(3) << "\n"; /* Prints 1 */
cout << a_set.test(0) << "\n"; /* Prints 0 */

a_set.clear(5); /* Set contains [3] */
```

2   Super Bonus!

Minimize Storage Implement your class in such a way that the set is maintained using only a single private variable of type `int32_t`. This type is obtained with `#include <cstdint>`. This type is used to specify an integer variable that is guaranteed to use exactly 4 bytes of memory.