Summation:

What is Summation? Addition of sequence results in their sum or total. That sum is Summation of the sequence.

So question is simple. Scan the array or list for the elements and add them. Now return the sum.

**public** **static** **int** sum(**int**[] a) {

**int** sum = 0;

**for** (**int** i = 0; i < a.length; i++) {

sum = sum + a[i];

}

**return** sum;

}

Now let us try to run some test cases as against this method.

**int** a = (**int**) Math.*pow*(2, 30);

**int** b = (**int**) Math.*pow*(2, 30);

**int** c = a + b;

@Test

**public** **void** testSummationInt1() {

Assert.*assertEquals*(24, Summation.*sum*(**new** **int**[] { 3, 2, 4, 5, 3, 2, 4, 1 }));

}

@Test

**public** **void** testSummationInt2() {

Assert.*assertEquals*(c, Summation.*sum*(**new** **int**[] { a, b }));

}

We have 2 test cases and both of them passed. Nice. But one question. Is this implementation right? Well, not exactly. Considering the second test case values for a and b is 2^30.

Now add them a + b. Well there is surprise. A bug that we just discovered.

a+b should be 2147483648. But instead we get -2147483648. Why is that? Because the range of int is -2,147,483,648 to 2,147,483,647. So we need to use datatype long for sum.

This will not solve the problem. We need to convert all values to long and then add them.