0. Once upon a time in this world, a 12 years old boy was checking his mail box. He saw an email from “Computer Island” which he had never heard of.

This was the text of the email:

Dear Programmer,

This is a secret email from us. Don’t tell anybody about this email!

Our island is located in the underground waters. We are working on a great Computer Project and as we could access your computer mark this year in school, we just got that you are the guy we need. If you want to join us, there is a little challenge for you.

There are two numbers randomly chosen for you as “a” and “b”. You should say what a×b-(a+b) would return.

a = …

b = …

Reply your answer to this email.

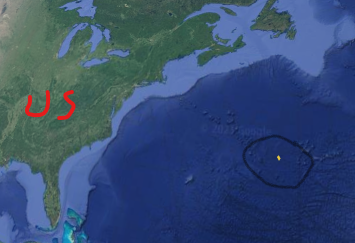
Now, let's ask you. Can you build an algorithm to return the answer with any number in a and b?

1. The boy, oh let’s first introduce him to you. His name is Sam. Sam was surprised. Who are they? How could they find him? Why did they choose him? (his computer mark was 6 this term, hahaha). Then he thought he should go there because it may be interesting. He finally sent the answer and waited for their email. After a month, an email came:

Dear Programmer,

Sorry for our delay. Our processors are too slow and they just could check your answer yesterday. So because of that we are searching for new talents.

Our location is here:



But 100 kilometers underground. The way is to go on a ship and jump out of it near this spot. Then you’ll see a green light down in the ocean. Pay attention to having scuba diving equipment. Follow down to the green light and you will see a gate. There would be a map to help you.

And if you know somebody who can help you, you can tell 1 friend about this and he can come with you.

Waiting for you.

He couldn’t go alone so he told his best friend, Alex about these emails. Alex agreed to go with him. They went to a short Course “Scuba Diving in Two Weeks” and they were completely ready, so they went on the ship, jumped in the sea and then they were beside the gate!

There was a little screen that this was written in it:  
Hi! Time for a little verification.

Do you remember which number did you reply to our email? Put that as “a” and return this: a \* a + a.

Answer: …

Now it is your turn. Write an algorithm that will return the answer with any number in a.

2. After the verification a map was shown on the screen. Sam and Alex walked through the way. On the way, a man was standing. A conversation started:  
Sam: Hi!

Man: 12454864936, 12454864937 oh, hi. 12454864938

Alex: What are you doing?

Man: 12454864939, 12454864940 I am counting. Oh, Can you play with me?

Sam: What?

Man: I love numbers. I want to ask you some questions. I will give you two numbers as “a” and “b”. If a is bigger than b, return their average. And if not, return a + b.

OK. Your turn! But first some points:

* The number will be given in a way that their average would be an integer.
* Think about what you should return if a = b.
* You’ll Learn a new algorithm in this question.

Ready for coding? Start!

3. The man continued:

OK. But you are not a pro! Another question. Think of 4 different integers as A, B, C, D. If A is the greatest, return  
B + C. Else if C is the greatest, return A + D, else if B is the smallest, return C + A. ELse return A+B+C+D-2.

A bit complicated? You can do it. Let’s go!