

Pairs

Time limit: 1 second

Memory limit: 1024 MB

For a given N , we will call the pairs of numbers (a, b) , where $0 \leq a < b \leq N - 1$, valid pairs. We want to encode each valid pair as another valid pair such that they don't have common numbers. Also we want to be able to decode the original valid pairs using the encoded ones.

Implementation details

Since this is a communication problem, your program will be run in two separate executions (one for the encoding and one for the decoding) that cannot share data or communicate in any way other than the one described here. You need to implement two functions:

```
std::pair<int, int> encode(int N, std::pair<int, int> p)
```

- N : the limit for the numbers;
- p : a valid pair for encoding.

This function will be called T times. It has to return a valid pair that encodes p and does not have a common number with it.

```
std::pair<int, int> decode(int N, std::pair<int, int> p)
```

- N : the limit for the numbers;
- p : a valid pair for decoding.

This function will also be called T times. It has to return the decoded valid pair that corresponds to the encoded pair p .

Constraints

- $4 \leq N \leq 50$
- $1 \leq T \leq 1\,225$

Example

Participant program	Jury program
	encode(5, {1, 3})
return {2, 4}	-
	encode(5, {0, 4})
return {1, 2}	-
	decode(5, {2, 4})
return {1, 3}	-
	decode(5, {1, 2})
return {0, 4}	-

Subtasks

Subtask	Points	N	Additional constraints
0	0	-	The example.
1	10	≤ 50	You can encode a valid pair as any valid pair (the restriction that they don't have a common number is not applied).
2	20	$= 4$	-
3	30	≤ 7	-
4	40	≤ 50	-

Sample grader

The sample grader makes all function calls in a single execution. The input format is the following:

- line 1: one integer – the subtask number;
- line 2: one integer – the value of T ;
- line 3 to $T + 1$: three integers N, a, b – the limit of the numbers and a valid pair (a, b) .

The output is either an error message or is in the following format:

- line i : a boolean value – 1 if the corresponding decode call successfully decoded the valid pair with the valid pair returned by the corresponding encode call, 0 otherwise.

For more detailed feedback, change the value of the macro `DETAILED` from `false` to `true` in the first line of the sample grader.