

# Mercadolibre Exam

Magneto wants to recruit as many mutants as possible to fight against the X-Men.

He has hired you to develop a project that detects if a Human is mutant based on its DNA sequence.

For that you have been asked to create a program with a method or function with the following signature (in one of the following languages: Java / Golang / C-C ++ / Javascript (node) / Python / Ruby):

**boolean isMutant(String[] dna); // Ejemplo Java**

Where you will receive as parameter an array of Strings that represent each row of a table of (NxN) with the DNA sequence. The letters of the Strings can only be: (A, T, C, G), the which represents each nitrogenous DNA base.

A	T	G	C	G	A
C	A	G	T	G	C
T	T	A	T	T	T
A	G	A	C	G	G
G	C	G	T	C	A
T	C	A	C	T	G

A	T	G	C	G	A
C	A	G	T	G	C
T	T	A	T	G	T
A	G	A	A	G	G
C	C	C	C	T	A
T	C	A	C	T	G

No-Mutante

Mutante

You will know if a human is mutant, if you find **more than one sequence of four equal letters**, obliquely, horizontally or vertically.

**Example (Mutant case):**

```
String[] dna =  
{"ATGCGA","CAGTGC","TTATGT","AGAAGG","CCCCTA","TCACTG"};
```

In this case the call to the function isMutant(dna) returns "true".

Develop the algorithm in the most efficient way possible.

## **Challenges:**

### **Level 1:**

Program (in any programming language) that complies with the method requested by Magneto.

### **Level 2:**

Create a REST API, host that API in a free cloud computing (Google App Engine, Amazon AWS, etc), create the service `/mutant/` where you can detect if a human is mutant sending the DNA sequence through an HTTP POST with a Json which has the following format:

```
POST → /mutant/
{
  "dna":["ATGCGA","CAGTGC","TTATGT","AGAAGG","CCCCTA","TCACTG"]
}
```

In case of verifying a mutant, should return a HTTP 200-OK, if not a 403-Forbidden.

### **Level 3:**

Attach a database, which stores the DNAs verified with the API.

Only 1 record per DNA.

Expose an extra service `/stats` that a Json returns with the statistics of the DNA checks:

```
{"count_mutant_dna":40, "count_human_dna":100:"ratio":0.4}
```

Keep in mind that the API can receive aggressive traffic fluctuations (Between 100 and 1 million requests per second).

### **Deliver:**

- Operating instructions (Free, as many as you want)
- Source Code (In the format you want, as standard as possible).
- In addition to the source code, any additional piece that you consider contributes to the quality
- of the software built.
- API URL (Level 2 and 3).