

1 - DecReprSenior

Two non-negative integers are called siblings if they can be obtained from each other by rearranging the digits of their decimal representations. For example, 123 and 213 are siblings. 535 and 355 are also siblings.

A set consisting of a non-negative integer N and all of its siblings is called the family of N . For example, the family of 553 comprises three numbers: 355, 535 and 553.

Write a function with the following inputs and outputs:

- input: N (integer)
- output: integer

That, given a non-negative integer N , returns the largest number in the family of N . The function should return -1 if the result exceeds 100,000,000.

As an example, a C# answer for this exercise could have the following format:

```
int solution(int N);
```

Inputting $N=213$ to this function should return 321. For $N=553$, the function should return 553.

Assume that:

- N is an integer within the range $[0..2,147,483,647]$.

Complexity:

- Expected worst-case time complexity is $O(N)$;
- Expected worst-case space complexity is $O(N)$.

2 - New CDN iTaas

Log files can tell much about a system's behavior in a production environment. Extracting data from these files helps the decision-making process for both business and development roadmap.

iTaaS Solution is a company focused on content delivery, and one of its largest business challenges was CDN (Content Delivery Network) costs. Larger CDN costs increase the final pricing for its customers, reduce profits, and make it difficult to enter smaller markets.

After extensive research from their software engineers and financial team, they obtained an excellent deal from the company "MINHA CDN", and signed a one-year contract with them.

iTaaS Solution already has a system capable of generating billing reports from logs, called "Agora". However, it uses a specific log format, different from the format used by "MINHA CDN".

You have been hired by iTaaS Solution to develop a system that can convert log files to the desired format, which means that at this moment they need to convert them from the "MINHA CDN" format to the "Agora" format.

This is a sample log file in the "MINHA CDN" format.

```
312|200|HIT|"GET /robots.txt HTTP/1.1"|100.2
101|200|MISS|"POST /myImages HTTP/1.1"|319.4
199|404|MISS|"GET /not-found HTTP/1.1"|142.9
312|200|INVALIDATE|"GET /robots.txt HTTP/1.1"|245.1
```

The sample above should generate the following log in the "Agora" format:

```
#Version: 1.0
#Date: 15/12/2017 23:01:06
#Fields: provider http-method status-code uri-path time-taken
response-size cache-status
"MINHA CDN" GET 200 /robots.txt 100 312 HIT
"MINHA CDN" POST 200 /myImages 319 101 MISS
"MINHA CDN" GET 404 /not-found 143 199 MISS
```

```
"MINHA CDN" GET 200 /robots.txt 245 312 REFRESH_HIT
```

“MINHA CDN” will make log files through specific URLs.

The specification requires you to implement a solution that receives as input an URL (sourceUrl) and a destination file (targetPath). A sample call could be:

```
convert http://logstorage.com/minhaCdn1.txt ./output/minhaCdn1.txt
```

The sourceUrl parameter includes a file in the “MINHA CDN” format, and the output specified in the targetPath parameter corresponds to the file that needs to be created in the “Agora” format.

A sample log file that can be used for testing is available here:

<https://s3.amazonaws.com/uux-itaas-static/minha-cdn-logs/input-01.txt>

Beware that what will be analyzed on this exercise is the not only the correction of the code but also code best practices, like OOP, SOLID, unit tests and mocks.