CS 6314, Fall 2017
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Homework 1
Due September 10th, 2017 11:59 pm

1. (20 Points)

Your customer requires a web application that will support four (4) different operations. All these operations have similar requirements for system resources and have the same load on the server. Will you design your customer's web application using Service-Oriented Architecture (SOA)? Please explain your answer using a real-world example.

ANSWER:
YES. There are a lot of benefits to split different operations into their own services. A real-world example can be a bank website. You need to use it to deposit, view activity, transfer, request money, etc. Nobody want mess all those thing together, because you do not want your transfer impede your deposit service. When they become independent, you can deal with each part separately. No matter it's troubleshoot or you want to scale up your service, you can maintain each part as needed.

2. (20 Points)

Describe Shared-Nothing architecture using a real-world web application as an example.

ANSWER:
The example could be Google. The SN architecture is a highly scalable design. It can scale up simply by adding nodes which Google calls it sharding.

3. (40 Points)

Your client requires a website for the following services:

a. Very fast flight searches

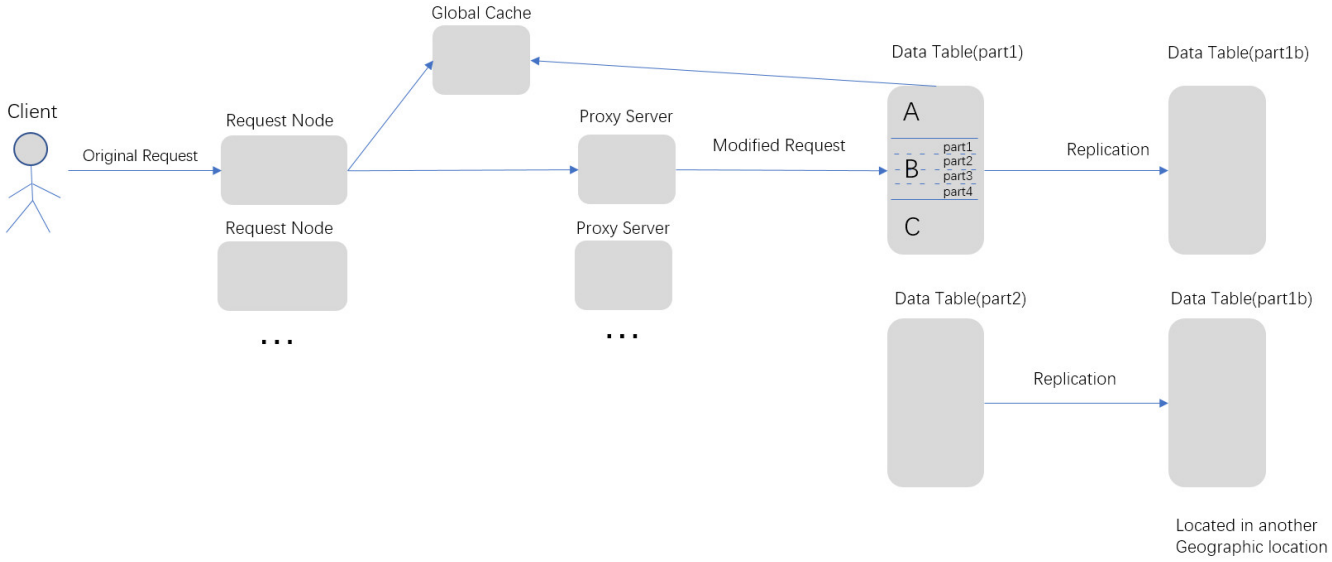
b. Highly available travel booking request

c. Reliable travel itinerary access

Draw a diagram showing your design of a scalable, service-oriented architecture to meet your client's requirements.

ANSWER:

This architecture use global cache with proxy server to improve the speed of searches, have redundancy of its services and data to ensure availability and reliable. Using index to deal with data further improve search speed.



4. (20 Points)

Define in your own words the following HTTP Request Methods with one or more examples:

a. HTTP GET

GET is the only method in the first version of the protocol. Its used to retrieve data which is mostly a HTML page, and should not have other effect. We also call it safe method, since it has no side effects.

b. HTTP HEAD

Basically, Head asks for meta-information, which means the information about information. This information is identical to the correspond GET request, which save the trouble to transport the entire content. HEAD is also safe method, has no side effects.

c. HTTP PUT

PUT is not safe method. It is used to request the enclosed entity which is stored under the supplied URI. There are two possible scenarios. If the supplied URI refer to some already existing resource, it is modified. If the supplied URI does not refer to an existing resource, and that URI is capable of being defined as a new resource, then the server can create new resource with that URI.

d. HTTP POST

POST request server to accept the subordinate resource which is enclosed in the origin request. The subordinate resource is basically a group of data, and can be identified use URI. There can be all kinds of information contain in it. And it is not safe, there may be some side effects.