Full Cloud Workspace:
https://www.mediafire.com/file/kmlpmgeny95xl12/SpringBoot9AM_CLOUD_RAG
HU_05062021.zip/file

                  Spring Cloud : Distributed Tracing
                       {Sleuth and Zipkin}

Download Link:
https://www.mediafire.com/file/jmpqrenm0yudehy/ZipkinExecutable.zip/fi
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*) Distributed Tracing:- it is a process of finding execution path for
a
              reuquest for all MS# (which are executed).

=> Consider in realtime, one application contains multiple MS#.
   In that finding execution PATH for a request is not so easy.
   That can be traced using 'Sleuth and Zipkin'.

*) Sleuth supports 'FINDING EXECUTION TRACE' by giving one unique Id
for
    that request ie called as TraceId (one id for complete path).

*) Sleuth supports 'FINDING ONE MS#' execution details by spanId.

*) All these details are printed at console/log file.
   But I want to print all these at UI ie Zipkin Server(UI)

*) From Sleuth , Zipkin Client collects data (Sampling) and send to UI
   ie Zipkin server.

=============Zipkin Server Setup====================
S#1 Download Zipkin Server
https://www.mediafire.com/file/jmpqrenm0yudehy/ZipkinExecutable.zip/fi
le

S#2 Extract to a folder and open folder

S#3 Open cmd location here

S#4 Enter command
> java -jar zipkin-server-2.12.9-exec.jar

S#5 Goto browser and enter URL
    http://localhost:9411/zipkin/

S#6 To Stop Service : ctrl+C

--------------(code)---

```
MS#1
a.
 Name: SpringCloudAppOneTest
 Dep : Web, Sleuth and Zipkin Client

pom.xml
        spring-cloud-starter-sleuth,
        spring-cloud-starter-sleuth

b. application.properties
server.port=8081
spring.application.name=APP-ONE-TEST
logging.file.name=D:/mylogs/appone.log


c. AppConfig
package in.nareshit.raghu.config;

import org.springframework.context.annotation.Bean;
import org.springframework.context.annotation.Configuration;
import org.springframework.web.client.RestTemplate;

import brave.sampler.Sampler;

@Configuration
public class AppConfig {

        @Bean
        public RestTemplate rt() {
                return new RestTemplate();
        }

        @Bean
        public Sampler alwasySampler() {
                return Sampler.ALWAYS_SAMPLE; //TURN ON
                //return Sampler.NEVER_SAMPLE; //TURN OFF
        }
}

d. RestController
package in.nareshit.raghu.rest;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.RestController;
import org.springframework.web.client.RestTemplate;

@RestController
public class AppOneRestController {

        private static final Logger LOG =
LoggerFactory.getLogger(AppOneRestController.class);

        @Autowired
        private RestTemplate rt;
```

```
        @GetMapping("/showA")
        public String showA() {
                LOG.info("WELCOME TO SERVICE #1 ");
                String msg  =
rt.getForObject("http://localhost:8082/showB", String.class);
                LOG.info("BACK TO SERVICE #1 : MSG {}", msg);
                return "DONE";
        }

}
```
==
*** Repeate same for AppTwo and AppThree
** Start Zipkin server
** Run All MS and Enter URL
http://localhost:8081/showA
** Goto
http://localhost:9411/zipkin
>> click on find trace
> click on blue colorbar
> view all details

Q) What is TraceId? when is it generated?
A) TraceId is given for one request made to App.
   That is used to find out complete path and associated log lines
   [On request it is generated by Sleuth]

Q) What is SpanId and ParentId?
A) For one MS# in trace, is identified using SpandId.
    If MS#2 is called by MS#1 then MS#1 SpandId is called as MS#2
ParentId.

Q) What is Sampling?
A) All Ids generated and execution paths are collected by Sleuth,
   these are need to be given to Zipkin Client for sending to UI
   [Zipkin Server UI], such collecting process is called as Sampling.

Q) Why RestController? can we use any other?
A) RestController is to make HTTP calls.
    We can use Eureka and any one client.

 MS# App name   TraceId   spanId   Sample(Zipkin)
[APP-ONE-TEST,57dc6425765f178b,57dc6425765f178b,true]

Q) How Zipkin Client is Connected to Zipkin Server?
A)
 > In Our MS# we need to add Zipkin Client along with Sleuth
 > Zipkin Client contains default location of Zipkin Server
     spring.zipkin.base-url=http://localhost:9411/

 > If Zipkin server is running in Diff IP/PORT then we need to provide
     externall in MS# above key=val

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