Karate

Karate maven versions

<!-- https://mvnrepository.com/artifact/com.intuit.karate/karate-core -->

<dependency>

<groupId>com.intuit.karate</groupId>

<artifactId>karate-core</artifactId>

<version>1.4.0</version>

</dependency>

Karate maven test cases

<!-- https://mvnrepository.com/artifact/com.intuit.karate/karate-junit5 -->

<dependency>

<groupId>com.intuit.karate</groupId>

<artifactId>karate-junit5</artifactId>

<version>1.4.0</version>

<scope>test</scope>

</dependency>

Generate project

mvn archetype:generate -DarchetypeGroupId=com.intuit.karate -DarchetypeArtifactId=karate-archetype -DarchetypeVersion=0.9.5 -DgroupId=com.mycompany –DartifactId=KarateUdemy

### Reference links

For assertions

<https://priyankab85.medium.com/cheat-sheet-for-karate-assertions-and-matching-d248383546e0>

<https://karatelabs.github.io/karate/> for full documentation

<https://github.com/karatelabs/karate> main git hub page

<https://github.com/karatelabs/karate/tree/master/karate-demo> many easy and sample projects are here

GIT hub links- sample project

<https://github.com/bondar-artem/angular-realworld-example-app/tree/node18compatible>

<https://github.com/karatelabs/karate>

<https://github.com/karatelabs/karate/blob/master/karate-demo/src/test/java/demo/schema/schema.feature>

karate with kafka- it is clearly we have samples here

<https://github.com/karatelabs/karate-examples/tree/main/kafka>

<https://github.com/Sdaas/karate-kafka>

For karate project template

<https://github.com/karatelabs/karate-template>

For karate sample projects

<https://github.com/karatelabs/karate-examples>

<https://github.com/karatelabs/karate-examples/blob/main/README.md>

<https://github.com/karatelabs/karate-todo/>

java links

<https://github.com/karatelabs/karate#java-api>

Live application urls

<https://angular.realworld.io/>

1. to login  
   <https://api.realworld.io/api/users/login>

{

    "user": {

        "email": "vv.manideeep1@gmail.com",

        "password": "MANIdeep@123"

    }

}

login cred- [vv.manideep1@gmail.com](mailto:vv.manideep1@gmail.com) pass- MANIdeep@123

1. to Fire post request

https://api.realworld.io/api/articles

<https://conduit.productionready.io/api/tags>

https://api.realworld.io/api/tags

https://api.realworld.io/api/articles?limit=10&offset=10

Karate keywords

Karate have many keywords to identify all those keywords are present in below

Remember after Gherkin keywords (Given, when, Then) we have to use these karate keywords

Exl:- Given url – here url is karate keyword

<https://github.com/karatelabs/karate>

HTTP- for http module below are the keywords

url | path | request | method | status | soap action | retry until | response

Keywords in Assert module

match == | match != | match contains | match contains only | match contains any | match contains deep | match contains only deep | match !contains | match each | match each contains deep | match header | Fuzzy Matching | Schema Validation | contains short-cuts

Maven build path setting

Generally when u build all the java files will be compiled to .class files, but these feature files from src/test/resources

Can not be compiled hence these files are generally not moved to target folder, but when u keep the below entry those

Feature Files will be moved to target folder.

If u don’t do this, feature files will not be added to target folder & classpath (if files are not added to classpath java program cant run those files)

Only after doing this, feature files will be moved to target folder and these files will be recognized

 to see the \*.java and \*.feature files and all related artifacts in the same place add below configurations

<https://github.com/karatelabs/karate#folder-structure>

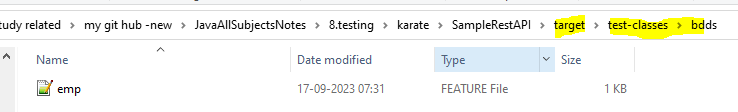
Gradle settings

|  |  |
| --- | --- |
| <build>  <testResources>  <testResource>  <directory>src/test/java</directory>  <excludes>  <exclude>\*\*/\*.java</exclude>  </excludes>  </testResource>  </testResources> </build> | sourceSets {  test {  resources {  srcDir file('src/test/java')  exclude '\*\*/\*.java'  }  }  } |

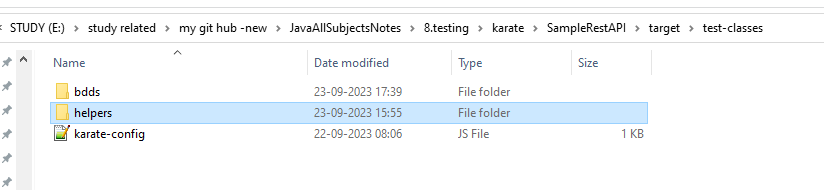
With the above in place, you don't have to keep switching between your src/test/java and src/test/resources folders, you can have all your test-code and artifacts under src/test/java and everything will work as expected.

|  |  |
| --- | --- |
| <dependency>  <groupId>io.karatelabs</groupId>  <artifactId>karate-core</artifactId>  <version>${karate.version}</version>  <classifier>all</classifier>  <scope>test</scope>  </dependency> | If you face issues such as "class not found", just pull in the karate-core dependency, and use the all [classifier](https://www.baeldung.com/maven-artifact-classifiers) in your pom.xml (or build.gradle). |

See here as per below image, all the feature files are moved to target due to above step



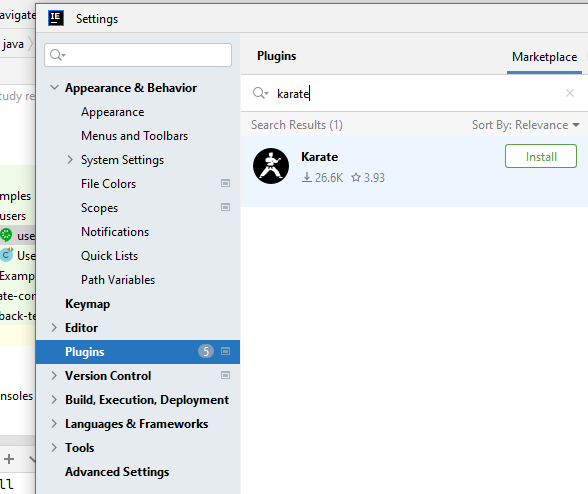
Remember all ur json files, test classes, all resources required to run BDD should come under this “test-classes” folder



Install karate plugin

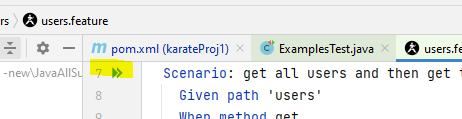
Install karate and gherkin plugins in intellj,

To install plugin🡪 go to file🡪 settings🡪 plugins🡪 search for all those plugins



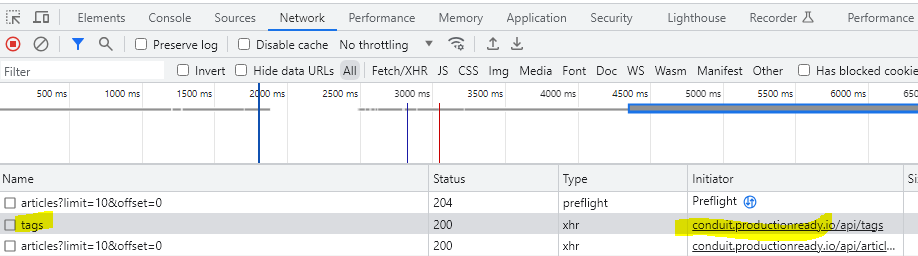
.feature files are karate test files

Run feature file- install all the required gherkin and karate plugins

here in the picture click left side play button to run all

the scenarios or which ever scenario u want

Finding the urls that get data



Xhr (xml http request ) are the request that fetch data from server

Karate-config.js & sample feature

|  |  |
| --- | --- |
| note  inside karate-config.js file we can happily write java code because  karate leverages graal vm javaScript engine that allows seamless interoperability with java (, GraalVM is a polyglot runtime that can execute multiple languages, including Java and JavaScript, in the same environment.)  hence we can directly write java code in karate-config.js  even chrome is also having 1 js engine but that js engine cant understand java as that is not polyglot | the name karate-config.js is the fixed name which framework expects  it is like logback-spring.xml  karate-config.js will be loaded before the Spring context is fully initialized. Spring's dependency injection mechanism (which @Autowired relies on) is not yet available at the point when karate-config.js is being processed. |
| This karate-config.js is the 1st file which will be loaded before feature files into memory by karate framework  This js function is returning an object and that obj is available for all features files  even from karate-config.js file we can invoke java classes   * to know whether that js file is being loaded or not use any of below  1. karate.log() 2. Console.log 3. sop   means it supports both java and js code  function fn() { var env = karate.env; *// get system property 'karate.env'*  karate.log('karate.env system property was:', env);  console.log("Js file is being loaded") java.lang.System.out.println("bro this log is from java sysout")  *//Fetching other props from command* var pass=java.lang.System.getProperty("vcap.dbpass") console.log("other var from cmd are ", pass)  java.lang.System.out.println("bro this log is from java sysout")  if (!env) {  env = 'dev';  }  var config = {  apiUrl : 'http://localhost:8080/employeeApi/'  }  if (env == 'dev') {  config.usernameFromKarateJs = 'mani'  config.passwordFromKarateJs = 'santu'  } else if (env == 'e2e') { config.usernameFromKarateJs = 'maniv1'  config.passwordFromKarateJs = 'santuv1'  } *// var accesstoken = karate.callSingle('classpath: bdds/empCrud.feature',config).token // karate.configure('headers',{Authorization : 'token'+accesstoken})* return config; }  profiles & passing values from command prompt through command  Note- while passing variable name maintain some space between D and env name  mvn test -D karate.env=dev  if u pass a variable in vm arguments, then same variable name can be used in code | What is a feature? It is like a big functionality ex:- money transfer feature  in that we have lot of scenarios – scene 1 money debited from source  but not credited to receiver – scene 2- receiver got 2 times  sample feature file  Feature: hit my local api methods  Background: cfg base url  Given url apiUrl  And path '/login'  *# if u define var in js, u can fetch using '#()*  And request { "user":"#(usernameFromKarateJs)", "password":"santu" }  When method Post  Then status 200  \* def token = response.token   Given path 'getAllEmployees'  When method Get  Then status 200  *# here the response is stored in the declared variable* \* def currentEmployeesCount = response.length  \* print 'current employees count is ' + currentEmployeesCount   Scenario: SAVE demo- login to get the token  *#this is to assert the return array size  # Here we hit a post method with header and request body  #asserting a json element* Given path '/saveEmp'  And header Authorization = token  *#when we want to use the variable we should use '#(some variable name)' ,  # if hash is already in triple quotes no need of enclosing it again in single quotes   #using the variable direclty* \* def newEmpnumber = currentEmployeesCount+ 1  \* print 'new emp number will be ' + newEmpnumber  \* def newEmpName = "Radhika"  \* def marks = newEmpnumber + 100  *# we can send as object or we can send in triple double quotes # And request { "empno":, "empname": "sailu", "marks": 402 }* And request  **"""  {  "empno": #(newEmpnumber) ,  "empname": '#(newEmpName)',  "marks": #(marks)  }  """** When method post  Then status 200 *# And match response[6] contains {"empname": '#(newEmpName)'}   #delete method demo, by passing json as object and delete last employee* Scenario: Delete method demo |
| passing other variables from command prompt  mvn test -D karate.env=dev -D vcap.dbpass=sql  //Generally if u pass like this –D <key>=<val> these the values will be set to system properties we can fetch using   1. system.getProperty() or 2. spring environment.getProperty() method |  |
|  |  |
|  |  |

Start spring container with junit

When we start the junit we can start the spring container parallelly before we run the feature

|  |  |
| --- | --- |
| @SpringBootTest(classes = SampleRestApiApplication.class)  //Because of this annotation spring container will be started class ExamplesTest {   *// this will run all \*.feature files that exist in sub-directories  // see https://github.com/intuit/karate#naming-conventions  // @Karate.Test* public Karate testAll() {  return Karate.*run*().relativeTo(getClass());  }   @Karate.Test  public Karate testSpecificTags() { *// Map<String, Object> args = new HashMap(); // args.put("name", "World");* System.***out***.println("Running via junit test method"); *// Runner.runFeature("classpath:bdds/empCrudv1.feature", args, true);* Karate dynamicNodes = Karate.*run*().tags("@mani").outputCucumberJson(true).relativeTo(getClass());  return dynamicNodes;  } | app flow for the command  mvn test -D karate.env=dev -D vcap.dbpass=sql   1. since we are running this command, first variables will be set to system properties 2. before running test method , 1st it will start the container by seeing @SpringBootTest 3. once container is ready , it will execute the test method there we placed logic to run feature 4. it will load karate-config.js first, then it will 5. execute that feature file |

Configure global variables in js

The lines placed in this file will be executed only once for all the feature files

If u want to execute some code before all features, then configure in js file

Given path '/saveEmp'  
And header Authorization = token

If u see above, we may have requirements to pass the headers to each and every request

Instead of passing in each request, we can set those headers in karate-config.js itself

As like below only

var accesstoken = karate.callSingle('classpath: bdds/empCrud.feature',config).token  
karate.configure('headers',{Authorization : 'token'+accesstoken})

Note: above is not working for now in my intellij

when this got executed for first time, it will configure those headers and pass those in each and every request



Feature files

#### Remember

Remember while writing scenario files ,

* 1 feature will have many scenarios, without feature keyword we cannot write scenario’s at all, so in every

Feature file writing feature keyword is mandatory

* after given/when/then keywords immediately first always we have to write karate keywords like url.. only

, after those only we have to write data

Ex:-

|  |  |
| --- | --- |
| When method Get | This will work fine, because after BDD keyword When , we have karate keyword method |
| When Get method | This will throw error, because karate keyword method, must always be first, not at last |
| Given | Given keyword is not mandatory |

* if u write keyword at last then it wont detect the keyword

ex:- Given url ‘some url’ -- here url is a keyword

* Background is the one which is going to be called each and every method
* While sending data in request body , we should enclose in single quotes as like below

And request { "user" : "mani", "password" : "santu" }

* To fetch the values from karate-config.js and all then we should use “#(some variable name)”, this is same like in spring

We fetch in property like “${variable name}”

* In karate prefer single quotes
* We can set the values to global object called “config” based on the environment value passed form –Dkarate.env=”dev”

And we can fetch using “#(variable name defined in karate-config.js file)”

While Asserting

1. Enclosing ‘#(any variable)’ in single quotes-

|  |  |
| --- | --- |
| single quotes lo hash of  ‘#(any var name)’   * This expression we can write in feature files | double quotes lo dollar of  “${}” |

And match response[9].empname == '#(ename)'

By default, we should enclose #() in single quotes, same like in spring “${}” – double quotes lo dollar lly single quotes lo #()

While asserting , when we are using #() inside triple quotes, we don’t need to enclose #() again in single quote

Importatnt points

|  |  |
| --- | --- |
| to print variable value there are 2 options   1. Using karate.log – this is best & easy to understand 2. Using print – difficult for me | Background:  Given url apiUrl  And karate.log( "var value is ",apiUrl) |
| debugging to know if a feature is executed or not  we can happily keep print statements inside each scenario | When method Delete  Then status 200  \* print 'Now after deleting latest count of employees is ' +response.length |
| print variables of js into console  Here this apiUrl is configured in js file | Background:  Given url apiUrl  And print apiUrl |

|  |  |
| --- | --- |
| Given keyword is enough for 1 time- next onwards And is preferred | Feature: Create and use the variables in feature files  Background:  *#this apiurl is a variable created in js file* Given url apiUrl  And path '/login'  And request  Background is the keyword that will be executed every time for each scenario |
| define a variable using \* or And keyword | \* def token = response.token  Given path '/saveEmp'  *# here we created a variable and we will use these variables using #()* And def userData = { "tcsempnum": 2000639, "tcsempname": "Manideep tata", "tcsmarks": 222 }  And header Authorization = token |

#### Famous errors

1. “no step-definition method match found for: staus 200”

When u get no step definition found, means some syntax u wrote wrong,

Even it could be space issue

Ex: def var= ‘mani’ 🡪 here if u see there is no space between var and =

**Ex:2** Then staus 200

Here in above status , T is missing hence it thrown “no step-definition method match found for: staus 200”

1. Dangerous space issues

\* def featureResponse = call read ('classpath:bdds/reUsableGlobalFeature.feature')

If there is any space issues , it wont even tell the error, it will simply wont call the feature at all,

We will think of build issues… feature file also would have been already present in target/test-classes

It wont even tell the error also properly

**So make sure no spaces between that**

|  |  |
| --- | --- |
| Issue in code | Root cause-solution |
| def var= ‘mani’ | No space between r&= |
| \* def credentials= read('cla...ntials.json') | Issue- no step definition found – means here no space between **s and =**  Solution:- put some space after s and before =  As **def credentials =** |
| def var = ‘mani’ | No step def found because, there are 2 spaces  Between r and =, Between r and = there should only be 1 space |
|  |  |

Invoking feature files from java

1. We can invoke feature files from java api /junit

|  |  |
| --- | --- |
| From junit we can invoke a feature file by passing some arguments | 1. from feature file we can invoke we can invoke java class methods   using Java.type   1. even from karate-config.js file we can invoke java classes |

<https://github.com/karatelabs/karate/blob/master/karate-demo/src/test/java/demo/java/JavaApiTest.java>

import com.intuit.karate.Runner;

import java.util.HashMap;

import java.util.Map;

import org.junit.jupiter.api.BeforeAll;

import org.junit.jupiter.api.Test;

import static org.junit.jupiter.api.Assertions.\*;

@Test

void testCallingClasspathFeatureFromJava() {

Map<String, Object> args = new HashMap();

args.put("name", "World");

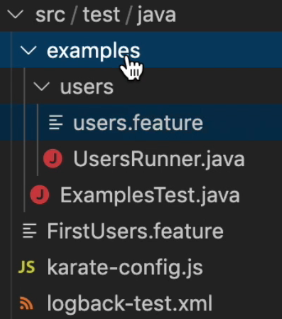
// U can even pass the values to feature files as below

Map<String, Object> result = Runner.runFeature("classpath:demo/java/from-java.feature", args, true);

assertEquals("Hello World", result.get("greeting"));

}

1. Have a global runner which will run all the feature files present in the current package

1) This main runner is also like spring component scan, it will scan only those classes

present in current package and sub packages.

Here also ExamplesTest is the main runner which will look for the feature files present in

The current package and sub packages, here it will look for the feature files like

“users.feature” not “FirstUsers.feature” because this file is outside

1. Mvn test// same like junit, when u run mvn test all the test files will be executed

In the same flow all those feature files will be executed

1. Via intellij plugin also u can run the individual scenario or entire feature file- like running junit in intellij

Running via junit

Whatever the way we have to tell where the bdds files are residing using classpath

Then only junit will know where bdd files exists

import com.intuit.karate.Runner;

@Test  
public void testInParallel(){  
 System.*out*.println("running test case parallelly ");  
 *//way -1 using karate.run()* Results parallelResults = Karate.*run*().tags("@mani").relativeTo(getClass()).outputCucumberJson(true).parallel(3);  
 *//way-2 using Runner.path* Results results = Runner.*path*("classpath:bdds/")  
 .tags("@mani")  
 .outputCucumberJson(true)  
 .parallel(3);  
}

|  |  |  |
| --- | --- | --- |
| Running single feature | Running all feature files in folder |  |
| Map<String, Object> result = Runner.runFeature("classpath:demo/java/from-java.feature", args, true);  assertEquals("Hello World", result.get("greeting")); | Runner.*path*("classpath:bdds/")  .tags("@mani")  .outputCucumberJson(true)  .parallel(3); | Karate.*run*().tags("@mani").relativeTo(getClass()). |
| class JavaApiTest {    @BeforeAll  static void beforeAll() {  // skip 'callSingle' in karate-config.js  System.setProperty("karate.env", "mock");  }    @Test  void testCallingFeatureFromJava() {  Map<String, Object> args = new HashMap();  args.put("name", "World");  Map<String, Object> result = Runner.runFeature(getClass(), "from-java.feature", args, true);  assertEquals("Hello World", result.get("greeting"));  }    @Test  void testCallingClasspathFeatureFromJava() {  Map<String, Object> args = new HashMap();  args.put("name", "World");  Map<String, Object> result = Runner.runFeature("classpath:demo/java/from-java.feature", args, true);  assertEquals("Hello World", result.get("greeting"));  }    } |  |  |

Running only specific feature using tags

@ignore is the predefined tag

Way1:- running via junit – here @ is very very important

@Karate.Test  
public Karate testSpecificTags() {  
 return Karate.*run*().tags("@mani").relativeTo(getClass());  
}

Ensure scenario is already annotated with @anyname

@mani

Scenario: hit PLain Get method url

Given path '/tags'

Now only scenarios or features annotated with /tags only will get executed

Way2:- using maven command

mvn test –Dkarate.options=”--tags @mani”

Reports-results

U will find all the reports under target🡪 karate-reports🡪 src.test.java…html

Sample feature files

Generally one feature will have lot of scenarios

Remember while writing scenario files ,

* first always we have to write karate keyword after given/when/then , after those only we have to write data
* if u write keyword at last then it wont detect the keyword

ex:- Given url ‘some url’ -- here url is a karate keyword

1. Calling GET method without data

Scenario: test url working or not  
 Given url 'https://conduit.productionready.io/api/tags'  
 When method Get is invoked  
 Then status 200 is returned back from the server

1. Calling GET method with data- by passing the path parameters as per below url

<https://api.realworld.io/api/articles?limit=10&offset=10>

way1 – passing parameters as object

we should keep all the pre requisites in given statement

Scenario: hit url with query paramers

Given params {limit:*10*, offset:*10*}

Given url *'https://api.realworld.io/api/articles'*

When Get method

Then status *200*

**Using AND operator with many pre conditions**

**Here we can pass data as json object**

Scenario: hit url with query paramers  
Given params {limit: 10 , offset:10}  
 And url 'https://api.realworld.io/api/articles'  
When method Get  
Then status 200

Using BACKGROUND and path keywords

Background keyword is used to write common statements in top, so that they will be executed every time for every scenario

‘path’ keyword is extension to url, here we kept base url in background and remaining subpath under

‘Path’ keyword

<https://api.realworld.io/api/articles?limit=10&offset=10>

<https://api.realworld.io/api/tags>

Feature: Api testing  
 Background: Define base url  
 Given url 'https://api.realworld.io/api'  
  
 Scenario: hit url with query parameters  
 Given path '/articles'  
 And params {limit:10, offset:10}  
 When method Get  
 Then status 200  
  
 Scenario: hit PLain Get method url  
 Given path '/tags'  
 When method Get  
 Then status 200

Assertions

Calling a post method with headers

https://api.realworld.io/api/users/login

login cred- [vv.manideep1@gmail.com](mailto:vv.manideep1@gmail.com) pass- MANIdeep@123

First we have to login to this url and get the token from result, then we have to pass that token as header for all post requests

Fire a post request to get the token

https://api.realworld.io/api/users/login

{

    "user": {

        "email": "vv.manideeep1@gmail.com",

        "password": "MANIdeep@123"

    }

}

Second post request number 2

<https://api.realworld.io/api/articles>

{

    "article": {

        "tagList": [],

        "title": "PAvan kalyan is hero ",

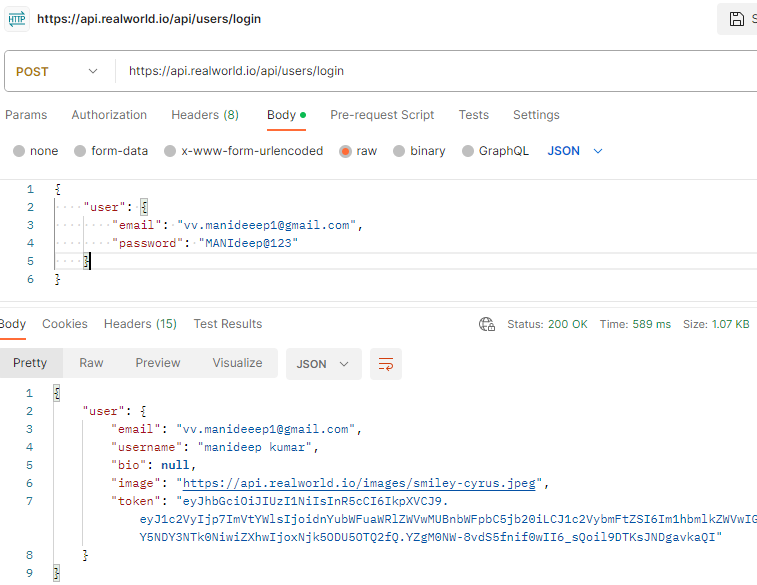
        "description": "chandrababu arrest in AP",

        "body": "chandrababu is a golden person"

    }

}

Add a header named “Authorization” and value “Token <your token from previous step>”



Related BDD script

Here we will call a post method with header and create a variable to store the output of the REST response

There should not be any spacing gaps in between = and all

Feature:demo the post method with header  
  
 Background: cfg the base url  
 Given url 'https://api.realworld.io/api'  
  
  
 Scenario: login to get the token and pass that token as header to publish the article  
 Given path '/users/login'  
 And request { "user": { "email": "vv.manideeep1@gmail.com", "password": "MANIdeep@123" } }

#when json request is big, then we should enclose that in triple double quotes “”” <ur json obj> “””  
 When method Post  
 Then status 200  
 \* def token = response.user.token  
  
 Given header Authorization = 'Token '+ token  
 Given path '/articles'  
 And request {"article": {"tagList": [],"title": "sai in hero","description": "chiru in hero","body": "cn"}}  
 When method post  
 Then status 201  
 And match response.article.title == 'sai in hero'

Calling a delete method

#delete method demo, by passing json as object

Scenario: Delete method demo

Given path '/deleteEmp'

And request { "empno": 11 }

And header Authorization = token

When method Delete

Then status 200

Creating variables in feature files & using them there itself

Guidelines

1. Sometimes u can directly use the variables as it is if it is integer

*# here the response is stored in the declared variable, here response is array*\* def currentEmployeesCount = response.length

*#using the variable directly as this is a integer* \* def newEmpnumber = currentEmployeesCount+ 1

1. If u are using a variable inside triple quotes, use with hash like below, single quotes is optional here

\* def newEmpnumber = currentEmployeesCount+ 1

Case:1 **we can use #(var name ) without single quotes**

And request  
"""  
 {  
 "empno": #(newEmpnumber) ,

Case 2:- **we can also use #(var name ) in single quotes,** it will also work without any issues

Here below ‘#(newEmpName)’ is in single quotes

And request  
"""  
 {  
 "empno": #(newEmpnumber) ,  
 "empname": '#(newEmpName)',  
 "marks": 402  
 }  
"""

1. If u are for comparision in a json object then also use in a hash (single quotes Is optional)

And match response[6] contains {"empname": #(newEmpName)}

# as single quotes is optional here, if u want u can use, both will work

And match response[6] contains {"empname": '#(newEmpName)'}

1. This scenario is wrong

\* def resp = response[#(currentEmployeesCount)]

#(var) this wont work inside a array element

1. Example

Scenario: Delete method - to delete last employee  
 Given path '/deleteEmp'  
 \* def lastEmpNumber = currentEmployeesCount-1  
 And request { "empno": *#(lastEmpNumber) }* And header Authorization = token  
 When method Delete  
 Then status 200  
 \* print 'Now after deleting latest count of employees is ' +response.length

Feature: Create and use the variables in feature files  
 Background:  
 *#this apiurl is a variable created in js file* Given url apiUrl  
 And path '/login'  
 And request  
 """  
 {  
 "user": "mani",  
 "password": "santu"  
 }  
 """  
 When method Post  
 Then status 200  
 \* def token = response.token

Scenario: create variable and use it  
 Given path '/saveEmp'  
 *# here we created a variable and we will use these variables using #()* And def userData = { "tcsempnum": 2000639, "tcsempname": "Manideep tata", "tcsmarks": 222 }  
 And header Authorization = token  
 And request  
 """  
 {  
 "empno": #(userData.tcsempnum),  
 "empname": #(userData.tcsempname),  
 "marks": #(userData.tcsmarks)  
 }  
 """  
 When method post  
 Then status 200  
 And match response[7] contains {"empname": #(userData.tcsempname)}

Scenarios of variable creation

Here #(variable) is not included in single quotes

Profiles / env var

We can activate profiles using the command as mvn test –Dkarate.env=”dev”

for each and every environment url is different, so we will configure all those same like spring

In all environments **config** json object is available, we can prepare this object in karate-config.js as below

For every environment we can set the values to the json config object, we can fetch values from config object using “#()”

As Same like in springs “${}”

1. Sample from karate-config.js

* Here we will set values to config object,
* var env = karate.env; *// get system property 'karate.env'*

var **config** = {  
 apiUrl : 'http://localhost:8080/employeeApi/'  
 }  
 if (env == 'dev') {  
 config.usernameFromKarateJs = 'mani'  
 config.passwordFromKarateJs = 'santu'  
 } else if (env == 'e2e') {  
config.usernameFromKarateJs = 'maniv1'  
 config.passwordFromKarateJs = 'santuv1'  
 }



1. The values set to config object can be fetched in feature files using “#()”, here variable called

“usernameFromKarateJs” is configured in karate-config.js file, we fetched that var in feature file using “#()”

Feature: hit my local api methods  
 Background: cfg base url  
 Given url apiUrl  
 And path '/login'  
 And request { "user":"#(usernameFromKarateJs)", "password":"santu" }  
 When method Post  
 Then status 200  
 \* def token = response.token

Calling one feature from another feature file

@Before vs @BeforeEach

If u want to execute some code before all features, then write those statements in js file



Re-usable feature

------------

Feature: writing a reusable feature  
Scenario: Reusable feature -login to get the token  
 Given url 'http://localhost:8080/employeeApi/'  
 And path 'login'  
 *# we can load the json credentials from json file instead of  
# And request { "user" : "mani", "password" : "santu" }* \* def credentials = read('classpath:/bdds/json/credentials.json')  
 And request credentials  
 When method Post  
 Then status 200  
 \* def token = response.token  
 \* print 're-usable feature executed successfully'  
 Scenario: call java method and get name of employee  
 \* def EmpFakerClass = Java.type('helpers.EmpFaker')  
 \* def empObj = new EmpFakerClass ();  
 \* def empName = empObj.getEmployeeName()  
 \* print 'reusable scenario exec successfully and sending empnname as' + empName

Feature which called above feature

1. Here we called read() using call() method –this will be executed bec we kept under @Background

every time- like @BeforeEach

1. Callonce read() here this will be called only once- its like @BeforeAll()- evethough u kept in background.

Feature: hit my local api methods  
 Background: demo for @Before and @BeforeEach  
 *# when we used call method, since we kept this in background, this will be executed for every scenario* \* def featureResponse = call read('classpath:bdds/reUsableGlobalFeature.feature')  
  
 *#as we used CALLONCE() method,eventhough we used placed this in background,this method will be cached and  
 # this method will be executed only once  
# \** def featurecalledOneTime = callonce read('classpath:bdds/reUsableGlobalFeature.feature')  
\* def ename = featureResponse.empName  
 Scenario: s1  
 \* print 'scenario 1 exec and received name as '+ ename  
 Scenario: s2  
 \* print 'scenario 2 exec and received name as '+ ename

Assertions

Keywords in Assert module

Here like in junit, instead of “assert” we have to use “match” keyword

match == | match != | match contains | match contains only | match contains any | match contains deep | match contains only deep | match !contains | match each | match each contains deep | match header | Fuzzy Matching | Schema Validation | contains short-cuts

<https://api.realworld.io/api/articles?limit=10&offset=10>

**Response is   
{**"articles": **[{},{} …10 such objects] ,** "articlesCount": **197}**

this will give 10 json objects

<https://api.realworld.io/api/tags>

Response is

**{**"tags": **[**"welcome","implementations","introduction","codebaseShow","ipsum","qui","cupiditate","et","quia","deserunt"**]}**

Examples

1. Asserting the size of array and
2. Asserting the exact value

Feature: Api testing  
 Background: Define base url  
 Given url 'https://api.realworld.io/api'

Scenario: hit url with query parameters https://api.realworld.io/api/articles?limit=10&offset=1  
 Given path '/articles'  
 And params {limit:10, offset:10}  
 When method Get  
 Then status 200  
 *# this returns json whose key is articles and value is array of objects whose size is 10* And match response.articles == '#[10]'  
 *# this is asserting a field* And match response.articlesCount == 197  
  
Scenario: hit PLain Get method url  
 Given path '/tags'  
 When method Get  
 Then status 200  
 *#the below asserts tags value is having 10 objects* And match response.tags == '#[10]'  
 And match response.tags contains ['welcome']  
 And match response.tags contains 'ipsum'  
 And match response.tags !contains 'orayya'  
 *# asserting the output datatype is array* And match response.tags =='#array'  
 *# loop and assert each element as string*And match each response.tags == '#string'

And match response[7] contains {"empname": #(userData.tcsempname)}

Note: Same like in junit as we have “assert” keyword, here we have “match” keyword

1. Asserting an array value – if the output is array of string as below

Sample output:- [ "manideep", "santu", "sailu", "charan", "ramadevi", "ranga rao" ]

Scenario: Assert emp names  
 Given path '/getEmpNames'  
 When method Get  
 Then status 200  
 And match response contains ["ranga rao"]

And match response !contains ["anushka"]

1. Asserting the data types

When response is array of strings, then we can assert response as array data type

Sample output:- [ "manideep", "santu", "sailu", "charan", "ramadevi", "ranga rao" ]

Refer this file for complete feature



##### Asserting a json

And match response[6] contains {"empname": #(newEmpName)}

##### Asserting a number

See the last line , convert string to int and then compare to number

Given path 'getAllEmployees'  
When method Get  
Then status 200  
*# here the response is stored in the declared variable*\* def currentEmployeesCount = response.length  
\* print 'current employees count is ' + currentEmployeesCount

Scenario: Delete method - to delete last employee  
 Given path '/deleteEmp'  
 \* print 'deleting a list with curernt size of ' + currentEmployeesCount  
 And request { "empno": *#(currentEmployeesCount) }* And header Authorization = token  
 When method Delete  
 Then status 200  
 \* print 'Now after deleting latest count of employees is ' +response.length  
 *# since response.length is giving a string value of 4, we converted to number 4* And match parseInt(response.length) == currentEmployeesCount-1

##### Asserting arrays

Feature: assertions  
 Background: cfg base url  
 *#this base url is already configured in the js file*Given url apiUrl  
 Scenario: asserting array  
 Given path '/getEmpNames'  
 When method Get  
 Then status 200  
 *# here the output of the endpoint is like --> [ "manideep", "ramadevi", "ranga rao" ]  
 # Asserting the array count as 6* And match response == '#[6]'  
 *#Here response is array of strings, Assert the output array as array data type* And match response == '#array'  
 *# here response is array of strings, so assert each element in array as String data type* And match each response == '#string'  
 *# assert 1 element data as manideep* And match response contains "manideep"  
 And match response !contains "ramadevi1"  
 *# asserting 2 elements - here in this case both elements must be present* And match response contains ['manideep',"ramadevi"]  
 *# asserting any one in the list, means here we gave 2 ,but actual response should contain atleast one ele what is present here* And match response contains any ["manideep","eleWhichIsNotPresent-Luxembourg"]  
 *# to assert all the elements in the arry and it should not have any elements beyond it* And match response contains only [ "santu", "manideep","sailu", "charan", "ramadevi", "ranga rao" ]  
 *# asserting first element as manideep* And match response[0] == "manideep"  
 *# assert that first element must not be santu* And match response[0] != "santu"

*#sample output of that end point /getStudentNames is  
 #[  
 # { "studentName": "manideep", "marks": 101, "addrs": { "cityname": "luxemborg", "countryName": "europe" }, "gender": "male" },  
 # { "studentName": "santoor", "marks": 201, "addrs": { "cityname": "hyderabad", "countryName": "india" }, "gender": "female" },  
 # { "studentName": "charan", "marks": 301, "addrs": { "cityname": "chicago", "countryName": "America" }, "gender": "male" },  
 # { "studentName": "sai", "marks": 100, "addrs": { "cityname": null, "countryName": "America" }, "gender": "male" } ]  
 # ]* Scenario: Asserting array with inner objects  
 Given path '/getStudents'  
 When method Get  
 Then status 200  
 *# this api will give us array of 4 objes , assert arrray size or count* And match response == '#[4]'  
 *#assert first ele json value as string* And match response[0].studentName == '#string'  
 *#assert each object student name data type as string* And match each response..studentName == '#string'  
 And match response[0].studentName == 'manideep'  
 *#iterate through all objects of an array and atleast one obj it should contain 100 marks  
 # response[0] means 0th o index object, here response[\*] means every element inside an array- response[\*].marks gives [101,201,301,100]* And match response[\*].marks contains 100  
 *# among 4 objects in that array 1 obj value can be null,* And match response[\*].addrs.cityname contains null  
 *# matching inner objects with doubledot  
 # we can also write above statement as* And match response..cityname contains null  
 *# we want to compare each and every to male, if we use response[\*].gender-- this will give array of genders we cant compare array with single ele  
 # so to compare EACH AND EVERY ele we should use each operator whereas the response[\*].gender value is ["male","male","male","male"]* And match each response..gender == "male"  
 *# take gender list and it should not have any 'female' at all, here response[\*].gender -- will gives us the gender list* And match response[\*].gender contains "male"  
 *# take the gender list and it should contain male also ,* And match response[\*].gender contains "male"

1. Enclosing ‘#(any variable)’ in single quotes-

|  |  |
| --- | --- |
| single quotes lo hash of  ‘#(any var name)’ | double quotes lo dollar of  “${}” |

And match response[9].empname == '#(ename)'

By default, we should enclose #() in single quotes, same like in spring “${}” – double quotes lo dollar

While asserting , when we are using #() inside triple quotes, we don’t need to enclose #() again in single quote

Fuzzy matching

Fuzzy matching means – just comparing the type,

We won’t compare the output values only types

The supported markers are the following:

| **Marker** | **Description** |
| --- | --- |
| #ignore | Skip comparison for this field even if the data element or JSON key is present |
| #null | Expects actual value to be null, and the data element or JSON key *must* be present |
| #notnull | Expects actual value to be not-null |
| #present | Actual value can be any type or *even* null, but the key *must* be present (only for JSON / XML, see below) |
| #notpresent | Expects the key to be **not** present at all (only for JSON / XML, see below) |
| #array | Expects actual value to be a JSON array |
| #object | Expects actual value to be a JSON object |
| #boolean | Expects actual value to be a boolean true or false |
| #number | Expects actual value to be a number |
| #string | Expects actual value to be a string |
| #uuid | Expects actual (string) value to conform to the UUID format |
| #regex STR | Expects actual (string) value to match the regular-expression 'STR' (see examples above) |
| #? EXPR | Expects the JavaScript expression 'EXPR' to evaluate to true, see [self-validation expressions](https://github.com/karatelabs/karate#self-validation-expressions) below |
| #[NUM] EXPR | Advanced array validation, see [schema validation](https://github.com/karatelabs/karate#schema-validation) |
| #(EXPR) | For completeness, [embedded expressions](https://github.com/karatelabs/karate#embedded-expressions) belong in this list as well |

Example

*#sample output of that end point /getStudentNames is  
#[  
# { "studentName": "manideep", "marks": 101, "addrs": { "cityname": "luxemborg", "countryName": "europe" }, "gender": "male" },  
# { "studentName": "santoor", "marks": 201, "addrs": { "cityname": "hyderabad", "countryName": "india" }, "gender": "female" },  
# { "studentName": "charan", "marks": 301, "addrs": { "cityname": "chicago", "countryName": "America" }, "gender": "male" },  
# { "studentName": "sai", "marks": 100, "addrs": { "cityname": null, "countryName": "America" }, "gender": "male" } ]  
# ]*

Scenario: Fuzzy matching  
 *#refer above for output of this end point* Given path '/getStudents'  
 When method Get  
 Then status 200  
 *#both response..marks and response[\*].marks are same and gives array as output* And match response..marks contains 100  
 And match response[\*].marks contains 100  
 *#asserting each and every element as number datatype, here the values for marks are always number no nulls hence we used single hash* And match each response..marks == '#number'  
 *## match each and every objects cityname as string,but some objects have null , in that case we shold use ..* And match each response..cityname == '##string'  
 *# this says match each and every obj's cityname must be string, some can be null , so used double hash* And match each response[\*].cityname == '##string'

Schema valiadation

<https://github.com/karatelabs/karate#schema-validation>

<https://github.com/karatelabs/karate/blob/master/karate-core/src/test/java/com/intuit/karate/core/schema-like.feature>

\* def oddSchema = { price: '#string', status: '#? \_ < 3', ck: '##number', name: '#regex[0-9X]' }

\* def isValidTime = read('time-validator.js')

When method get

Then match response ==

"""

{

id: '#regex[0-9]+',

count: '#number',

odd: '#(oddSchema)',

data: {

countryId: '#number',

countryName: '#string',

leagueName: '##string',

status: '#number? \_ >= 0',

sportName: '#string',

time: '#? isValidTime(\_)'

},

odds: '#[] oddSchema'

}

"""

Example 2

Scenario: schemavalidation  
 \* def validator = read('classpath:bdds/time-validator.js')  
 Given path 'getAllEmployees'  
 When method Get  
 Then status 200  
 And match each response[\*] ==  
 """  
 {  
 "empno": '#number',  
 "empname": '#string',  
 "marks": '#number',  
 "doj": "#? validator(\_)"  
}  
 """

--related java function

<https://github.com/karatelabs/karate/blob/master/karate-core/src/test/java/com/intuit/karate/core/schema-like-time-validator.js>

function fn(s) {  
 var SimpleDateFormat = Java.type("java.text.SimpleDateFormat");  
 var sdf = new SimpleDateFormat("yyyy-MM-dd'T'HH:mm:ss");  
 try {  
 sdf.parse(s).time;  
 return true;  
 } catch(e) {  
 karate.log('\*\*\* invalid date string:', s);  
 return false;  
 }  
}

Calling java static & instance methods



If u are calling a void method, u can use a keyword called eval

Feature: calling a java methods  
 Background: cfg base url and call static and instance method  
 Given url apiUrl

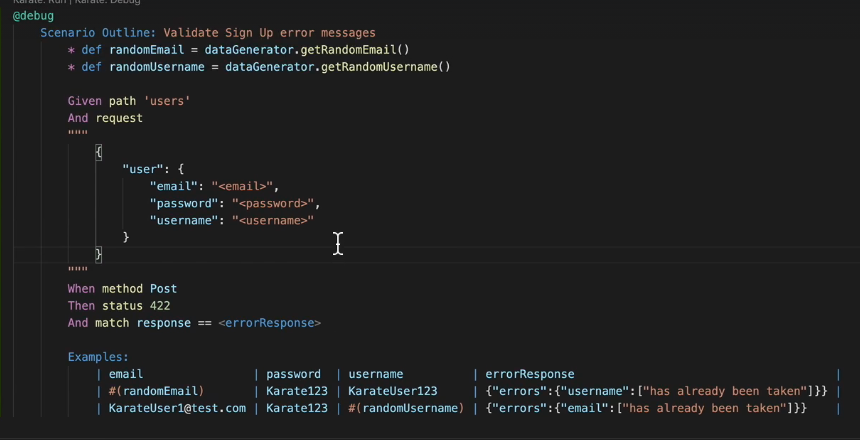
*# load the java class*

\* def faker = Java.type('helpers.EmpFaker')  
 *#here assume faker as class name  
  
 # here getLoginUserName() is a static method* \* def username = faker.getLoginUserName()

# to call a void method use eval keyword

\* eval faker.someVoidMethod()  
  
 *# creating obj of class and call instance method* \* def obj = new faker()  
 \* def loginPass = obj.getLoginPassword()  
  
 And path '/login'  
 And request  
 """  
 {  
 "user":#(username),  
 "password":#(loginPass)  
 }  
 """  
 When method Post  
 Then status 200  
 And def token = response.token  
  
 Scenario: calling java instance and static methods  
 Given path '/saveEmp'  
 *# obj is object of that class, since getEmpNumber() is instance method we should call with obj reference* \* def enumber = obj.getEmpNumber()  
 \* def ename = obj.getEmployeeName()  
 *# here faker is class var reference name, so we can call with class name* \* def emarks = faker.getEmployeeMarks()  
 And header Authorization = token  
 And request  
 """  
 {  
 "empno": #(enumber),  
 "empname": #(ename),  
 "marks": #(emarks),  
 "doj" : "2023-09-22T07:33:53.647"  
 }  
 """  
 When method post  
 Then status 200  
 And match response[9].empname == '#(ename)'

Exec same scenario with diff i/p



Here if u see, the scenario outline, same scenario will be executed multiple number of times with diff different inputs

Which are provided under examples



Scenario Outline: run same scenario with multiple examples  
 Given path '/saveEmp'  
 And header Authorization = token  
 *# here we are calling java instance method to get the random employee name* And def ename = obj.getEmployeeName()  
 And request  
 *## here the values for <eno>, <emarks> will be given by examples section* """  
 {  
  
 "empno": "<eno>",  
 "empname": #(ename),  
 "marks": "<emarks>"  
 }  
 """  
 When method post  
 Then status 200  
 And match response[<index>].empname == '#(ename)'  
 And match response[<index>].empno == <eno>  
*# here now we gave 4 sets of data, now same scenario will be executed 4 times with all below inputs* Examples:  
 |eno | emarks |index  
 |7 |208 |6  
 |8 |209 |7  
 |9 |210 |8  
 |10 |211 |9

Reading data from files



Many times, we will have big json data , instead of hard coding that json in feature files,

We can keep that json in file and fetch it from feature file

Feature: demo to pull data from json files  
 Background: cfg base url and load data from feature files  
 Given url apiUrl  
 And path '/login'  
 *#here to login we will get the json from this json file instead of hard coding here* \* def credentials = read('classpath:bdds/json/credentials.json')  
 \* def payload = read ('classpath:bdds/json/employee.json')  
  
 *# since the same json will be loaded from file everytime we run the test case, here we can override with dynamic values  
  
 # load the java class* \* def empFakerClass = Java.type('helpers.EmpFaker')  
 *# create obj for this class to call instance methods* \* def empObj = new empFakerClass()  
  
 *# modify the payload with the random value generated by java method* \* set payload.empname = empObj.getEmployeeName()  
  
 And request credentials  
 When method post  
 Then status 200  
 And def token = response.token  
  
 Scenario: read json data from file & call java methods to modify it  
 Given path '/saveEmp'  
 And header Authorization = token  
 And request payload  
 When method post  
 Then status 200  
 *# assert the response with payload data with what we sent* And match response[10].empname == payload.empname

Printing values

1. Using karate.log(‘some log’) – generally this is used in javascript functions
2. Using print keyword

And def token = response.token  
 \* print token

\* print 'size after savings is ' +noOfEmpsBeforeSaving

Here print is the main keyword, we can use + operator also



Interacting with database

Here from feature file we will just call java methods as like below

My example

Feature: database interaction  
 Scenario: insert a record in database by calling java method  
 \* def h2DaoClass = Java.type('helpers.H2Dao')  
 \* def result = h2DaoClass.insertData(4,"rangayya","kavali")  
  
 Scenario: fetch a record and assert those values  
 \* def h2DaoClass = Java.type('helpers.H2Dao')  
 \* def result = h2DaoClass.fetchData(2)  
 \* print 'Got result from database as ' + result  
 \* print 'Got emp name as ' + result.empname  
 \* match result == "santhoshi"



Artems example



Scenario: read json data from file & call java methods to modify it  
  
Given path '/saveEmp'  
 \* set payload.empno = noOfEmpsBeforeSaving +1  
 And header Authorization = token  
 And request payload  
 When method post  
 Then status 200  
 *# assert the response with payload data with what we sent* \* print 'size after savings is ' +noOfEmpsBeforeSaving  
 \* def nv = noOfEmpsBeforeSaving  
 \* print 'var nv value is '+nv  
 And match response['#(nv)'].empname == payload.empname

Debugging tips

1. 1st identify which line it came, if u cant find line number ,

Comment some piece of code and then try running the code and uncomment other piece, slowly narrow done

And find the line number

1. Don’t afraid if error come, read it carefully and find mistake

Assignment



Feature: assingments bro  
 Background: cfg base url and token generation  
 *#this url is configured in js file* Given url apiUrl  
 And path '/login'  
  
 *#read() is a java method , so to pass file name as string we should enclose in single quoted  
 # here we have placed credentials in json and we are loading to send as part of POST request* \* def credentials = read ('classpath:/bdds/json/credentials.json')  
 And request credentials  
 When method post  
 Then status 200  
 \* def token = response.token  
 \* print 'received token as -->' + token  
  
 Scenario: save new emp with existing modified data  
 Given path '/getAllEmployees'  
 When method Get  
 Then status 200  
 \* def resultObj = response[response.length -1]  
 \* print 'received result as '+ resultObj.empname  
 \* def existingCount = response.length  
  
 *#now we have to take the previous response and modify it and save it to the list by hitting POST request* Given path '/saveEmp'  
 *# fetch and modify values of previous object* \* def newEmpno = resultObj.empno +1  
 \* def newEmpMarks = resultObj.marks +1  
 *# to generate emp name we will call java class instance method and get a random name* \* def EmpFakerClass = Java.type('helpers.EmpFaker')  
 \* def empObj = new EmpFakerClass()  
 \* def newEmpName = empObj.getEmployeeName()  
  
 *# now with all above values we will modify the above json object* \* set resultObj.empno = newEmpno  
 \* set resultObj.marks = newEmpMarks  
 \* set resultObj.empname = newEmpName  
  
 And request resultObj  
 And header Authorization = token  
 When method post  
 Then status 200  
 \* print 'new count of employees is ' + response.length  
 And match response[10].empname == '#(newEmpName)'  
*# And match response.length == '20'*

Advanced features

Parallel execution

We can annotate any scenario or feature file, with @parallel=false, so that it will not be executed in parallel

Runner.*path*("classpath:/bdds").parallel(3);

Cucumber report

Cucumber report will be nice

<https://karatelabs.github.io/karate/#test-reports>

<https://github.com/damianszczepanik/cucumber-reporting>



1. Add cucumber reporting dependency

<dependency>  
 <groupId>net.masterthought</groupId>  
 <artifactId>cucumber-reporting</artifactId>  
 <version>5.7.3</version>  
</dependency>

1. Create a method called generateReport & pass the results to that method as like in attached file and
2. Run the rest case , reports will be generated in target folder under “cucumber-html-reports”

U will get a report like this 

public class DemoTestParallel {

@BeforeAll

static void beforeAll() {

TestBase.beforeAll();

}

@Test

void testParallel() {

Results results = Runner.path("classpath:demo")

.outputCucumberJson(true)

.karateEnv("demo")

.parallel(5);

generateReport(results.getReportDir());

assertTrue(results.getFailCount() == 0, results.getErrorMessages());

}

public static void generateReport(String karateOutputPath) {

Collection<File> jsonFiles = FileUtils.listFiles(new File(karateOutputPath), new String[] {"json"}, true);

List<String> jsonPaths = new ArrayList<>(jsonFiles.size());

jsonFiles.forEach(file -> jsonPaths.add(file.getAbsolutePath()));

Configuration config = new Configuration(new File("target"), "demo");

ReportBuilder reportBuilder = new ReportBuilder(jsonPaths, config);

reportBuilder.generateReports();

}

}

<https://github.com/karatelabs/karate/blob/master/karate-demo/src/test/java/demo/DemoTestParallel.java#L43>

always try to search in karate labs root folder