

CMPE 282 – Cloud Services

Homework 1

Student ID: 010034700

Submitted by: Keertikeya Gupta

Soln. 1.**a.**

Dev Tools: Eclipse EE Luna 4.4.1 on Ubuntu 14.04

REST Client: HTML Page

REST Server: web/app component, servlet, Tomcat 7.0

REST Server (NoSQL) database component: MongoDB on Ubuntu

b.

REST Server: used Servlet directly without relying on JAX-RS or Spring. Then deployed on Tomcat.

c.**MongoDB Script:**

```
use CMPE282KeertikeyaGupta700
```

```
db.createCollection("employee")
```

```
db.createCollection("project")
```

```
db.employee.insert({_id: 1, first_name: "John", last_name: "Doe"})
```

```
db.project.insert({_id: 1, name: "ProjectX", budget:12345.67})
```

Soln. 2.

HTTP Method + URI	Description	HTTP Status – successful	HTTP Status –err, in addition 400, 500	Status
GET/.../rest/project/m	Retrieve employee with id m. Resp Body: XML	OK (200)	Not found (404)	Partial
GET/.../rest/project/n	Retrieve project with id n. Resp Body: XML	OK(200)	Not found (404)	Partial
POST/.../rest/employee	Create a new employee. Req body: XML	Created (201)	Conflict (409)	Done
POST/.../rest/project	Create a new project. Req body: XML	Created (201)	Conflict (409)	Done
PUT/.../rest/project/m	Update employee with id m. Req body XML	OK (200)	Not found (404)	Done
PUT/.../rest/project/n	Update project with id n. Req body XML	OK (200)	Not found (404)	Done
DELETE/.../rest/project/m	Delete employee with id m	OK (200)	Not found (404)	Done
DELETE/.../rest/project/n	Delete project with id n	OK (200)	Not found (404)	Done
GET	Retrieve all employees. Resp body XML	OK (200)	Not found (404)	Partial
GET/.../rest/project	Retrieve all projects. Resp body XML	OK (200)	Not found (404)	Partial

GET/.../rest/employee/m is partially implemented. They data is being retrieved but it is not in XML format.

GET/.../rest/project/m is partially implemented. They data is being retrieved but it is not in XML format.

GET/.../rest/employee is partially implemented. They data is being retrieved but it is not in XML format.

GET/.../rest/project is partially implemented. They data is being retrieved but it is not in XML format.

Database before any GET/PUT/POST/DELETE operations:

```
kk@ubuntu: ~  
mm/transparent_hugepage/enabled is 'always'.  
2016-03-01T17:02:01.756-0800 I CONTROL [initandlisten] ** We suggest set  
ting it to 'never'  
2016-03-01T17:02:01.757-0800 I CONTROL [initandlisten]  
2016-03-01T17:02:01.757-0800 I CONTROL [initandlisten] ** WARNING: /sys/kernel/  
mm/transparent_hugepage/defrag is 'always'.  
2016-03-01T17:02:01.757-0800 I CONTROL [initandlisten] ** We suggest set  
ting it to 'never'  
2016-03-01T17:02:01.757-0800 I CONTROL [initandlisten]  
MongoDB Enterprise > show dbs  
CMPE282KeertikeyaGupta700 0.000GB  
keertikeyaDB 0.000GB  
local 0.000GB  
mydb 0.000GB  
MongoDB Enterprise > date; show dbs  
2016-03-03T07:56:31.060-0800 E QUERY [thread1] SyntaxError: missing ; before  
statement @(shell):1:11  
MongoDB Enterprise > show dbs  
CMPE282KeertikeyaGupta700 0.000GB  
keertikeyaDB 0.000GB  
local 0.000GB  
mydb 0.000GB  
MongoDB Enterprise > use
```

```

kk@ubuntu: ~
mm/transparent_hugepage/defrag is 'always'.
2016-03-01T17:02:01.757-0800 I CONTROL [initandlisten] ** We suggest set
ting it to 'never'
2016-03-01T17:02:01.757-0800 I CONTROL [initandlisten]
MongoDB Enterprise > show dbs
CMPE282KeertikeyaGupta700 0.000GB
keertikeyaDB              0.000GB
local                    0.000GB
mydb                     0.000GB
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2016-03-03T07:56:31.060-0800 E QUERY [thread1] SyntaxError: missing ; before
statement @(shell):1:11

MongoDB Enterprise > show dbs
CMPE282KeertikeyaGupta700 0.000GB
keertikeyaDB              0.000GB
local                    0.000GB
mydb                     0.000GB
MongoDB Enterprise > use CMPE282KeertikeyaGupta700
switched to db CMPE282KeertikeyaGupta700
MongoDB Enterprise > show collections
employee
project
MongoDB Enterprise >

```

```

kk@ubuntu: ~
ting it to 'never'
2016-03-01T17:02:01.757-0800 I CONTROL [initandlisten]
MongoDB Enterprise > show dbs
CMPE282KeertikeyaGupta700 0.000GB
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MongoDB Enterprise > show dbs
CMPE282KeertikeyaGupta700 0.000GB
keertikeyaDB              0.000GB
local                    0.000GB
mydb                     0.000GB
MongoDB Enterprise > use CMPE282KeertikeyaGupta700
switched to db CMPE282KeertikeyaGupta700
MongoDB Enterprise > show collections
employee
project
MongoDB Enterprise > db.employee.find()
{ "_id" : 1, "first_name" : "new", "last_name" : "object" }
MongoDB Enterprise >

```

```
kk@ubuntu: ~  
MongoDB Enterprise > show dbs  
CMPE282KeertikeyaGupta700 0.000GB  
keertikeyaDB              0.000GB  
local                     0.000GB  
mydb                      0.000GB  
MongoDB Enterprise > date; show dbs  
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CMPE282KeertikeyaGupta700 0.000GB  
keertikeyaDB              0.000GB  
local                     0.000GB  
mydb                      0.000GB  
MongoDB Enterprise > use CMPE282KeertikeyaGupta700  
switched to db CMPE282KeertikeyaGupta700  
MongoDB Enterprise > show collections  
employee  
project  
MongoDB Enterprise > db.employee.find()  
{ "_id" : 1, "first name" : "new", "last name" : "object" }  
MongoDB Enterprise > db.project.find()  
{ "_id" : 1, "name" : "ProjectX", "budget" : 12345.67 }  
MongoDB Enterprise > 
```

PUT Operations:

CMPE 282 HW 1

Stundet ID: 010034700

Stundet Name: Keertikeya Gupta

URL

Make sure URL contains proper path. E.g. **CMPE282KeertikeyaGupta700/rest/...**

HTTP Method

XML Content

```
<employee>
< id>1</ id>
<first_name>Alice</first_name>
<last_name>Bob</last_name>
</employee>
```

localhost:8080/DemoServlets/DemoServlet?url=CMPE282KeertikeyaGupta700%2Frest%2Femploy ip server/container lib folder. ☆ 📄 📧

HTTP Status 409 - Duplicate Key Exception: com.mongodb.MongoException\$DuplicateKey: { "serverUsed" : "localhost/127.0.0.1:27017" , "connectionId" : 139 , "err" : "E11000 duplicate key error collection: CMPE282KeertikeyaGupta700.employee index: _id_ dup key: { : 1 }" , "code" : 11000 , "n" : 0 , "ok" : 1.0}

type Status report

message Duplicate Key Exception: com.mongodb.MongoException\$DuplicateKey: { "serverUsed" : "localhost/127.0.0.1:27017" , "connectionId" : 139 , "err" : "E11000 duplicate key error collection: CMPE282KeertikeyaGupta700.employee index: _id_ dup key: { : 1 }" , "code" : 11000 , "n" : 0 , "ok" : 1.0}

description The request could not be completed due to a conflict with the current state of the resource.

Apache Tomcat/7.0.52 (Ubuntu)

CMPE 282 HW 1

Stundet ID: 010034700

Stundet Name: Keertikeya Gupta

URL

Make sure URL contains proper path. E.g. **CMPE282KeertikeyaGupta700/rest/...**

HTTP Method

XML Content

```
<employee>
< id>2</ id>
<first_name>Alice</first_name>
<last_name>Bob</last_name>
</employee>
```

localhost:8080/DemoServlets/DemoServlet?url=CMPE282KeertikeyaGupta700%2Frest%2Femploy ip server/container lib folder. →

Status 201: Created

localhost:8080/DemoServlets/HTML/Newindex.html ip server/container lib folder. →

CMPE 282 HW 1

Stundet ID: 010034700

Stundet Name: Keertikeya Gupta

URL

Make sure URL contains proper path. E.g. **CMPE282KeertikeyaGupta700/rest/...**

HTTP Method

XML Content

```
<project>
< id>1</ id>
<name>Android</name>
<budget>123</budget>
</project>
```



localhost:8080/DemoServlets/DemoServlet?url=CMPE282KeertikeyaGupta700%2Frest%2Fproject

ip server/container lib folder.

HTTP Status 409 - Duplicate Key Exception: com.mongodb.MongoException\$DuplicateKey: { "serverUsed" : "localhost/127.0.0.1:27017", "connectionId" : 141, "err" : "E11000 duplicate key error collection: CMPE282KeertikeyaGupta700.project index: _id_ dup key: { : 1 }", "code" : 11000, "n" : 0, "ok" : 1.0 }

Type

Status report

message

Duplicate Key Exception: com.mongodb.MongoException\$DuplicateKey: { "serverUsed" : "localhost/127.0.0.1:27017", "connectionId" : 141, "err" : "E11000 duplicate key error collection: CMPE282KeertikeyaGupta700.project index: _id_ dup key: { : 1 }", "code" : 11000, "n" : 0, "ok" : 1.0 }

description

The request could not be completed due to a conflict with the current state of the resource.

Apache Tomcat/7.0.52 (Ubuntu)

localhost:8080/DemoServlets/HTML/NewIndex.html

ip server/container lib folder.

CMPE 282 HW 1

Stundet ID: 010034700

Stundet Name: Keertikeya Gupta

URL

Make sure URL contains proper path. E.g. CMPE282KeertikeyaGupta700/rest/...

HTTP Method

XML Content

<project>
< id>2</ id>
<name>Android</name>
<budget>123</budget>
</project>

Send

localhost:8080/DemoServlets/DemoServlet?url=CMPE282KeertikeyaGupta700%2Frest%2Fproject

ip server/container lib folder.

Status 201: Created

```
kk@ubuntu: ~  
2016-03-01T17:02:01.756-0800 I CONTROL [initandlisten] ** WARNING: /sys/kernel/  
mm/transparent_hugepage/enabled is 'always'.  
2016-03-01T17:02:01.756-0800 I CONTROL [initandlisten] **          We suggest set  
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2016-03-01T17:02:01.757-0800 I CONTROL [initandlisten]  
2016-03-01T17:02:01.757-0800 I CONTROL [initandlisten] ** WARNING: /sys/kernel/  
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MongoDB Enterprise > show dbs  
CMPE282KeertikeyaGupta700  0.000GB  
keertikeyaDB              0.000GB  
local                    0.000GB  
mydb                     0.000GB  
MongoDB Enterprise > use CMPE282KeertikeyaGupta700  
switched to db CMPE282KeertikeyaGupta700  
MongoDB Enterprise > show collections  
employee  
project  
MongoDB Enterprise > db.project.find()  
{ "_id" : 1, "name" : "ProjectX", "budget" : 12345.67 }  
{ "_id" : 2, "name" : "Android", "budget" : 123 }  
MongoDB Enterprise > db.employee.find()  
{ "_id" : 1, "first_name" : "new", "last_name" : "object" }  
{ "_id" : 2, "first_name" : "Alice", "last_name" : "Bob" }  
MongoDB Enterprise > 
```

POST Operations:

CMPE 282 HW 1

Stundet ID: 010034700

Stundet Name: Keertikeya Gupta








URL

Make sure URL contains proper path. E.g. **CMPE282KeertikeyaGupta700/rest/...**

HTTP Method

XML Content

```
<employee>
<_id>2</_id>
<first_name>Harry</first_name>
<last_name>Potter</last_name>
</employee>
```

  0%2Frest%2Femployee%2F2&method=POST&content=<employee>%0D%0A<_id>2<%2F_id>%0D |   ip server/container lib folder. →   

Status 200: OK

localhost:8080/DemoServlets/HTML/NewIndex.html

ip server/container lib folder.

CMPE 282 HW 1

Stundet ID: 010034700

Stundet Name: Keertikeya Gupta

URL

Make sure URL contains proper path. E.g. **CMPE282KeertikeyaGupta700/rest/...**

HTTP Method

XML Content

```
<project>
<_id>5</_id>
<name>Android</name>
<budget>123</budget>
</project>
```

4PE282KeertikeyaGupta700%2Frest%2Femployee%2F5&method=POST&content=<project>%0D%0A</project>

ip server/container lib folder.

HTTP Status 404 - Cannot locate resource.

type Status report

message Cannot locate resource.

description The requested resource is not available.

Apache Tomcat/7.0.52 (Ubuntu)

CMPE 282 HW 1

Stundet ID: 010034700

Stundet Name: Keertikeya Gupta

URL

Make sure URL contains proper path. E.g. **CMPE282KeertikeyaGupta700/rest/...**

HTTP Method

XML Content

```
<project>
< id>2</ id>
<name>NANDroid</name>
<budget>99999</budget>
</project>
```

Send

Status 200: OK

CMPE 282 HW 1

Stundet ID: 010034700

Stundet Name: Keertikeya Gupta

URL

Make sure URL contains proper path. E.g. **CMPE282KeertikeyaGupta700/rest/...**

HTTP Method

XML Content

```
<employee>
< id>3</ id>
<first_name>Bilbo</first_name>
<last_name>Baggins</last_name>
</employee>
```

Send

localhost:8080/DemoServlets/DemoServlet?url=cmpe282keertikeya700%2Frest%2Femployee%2F... ip server/container lib folder. →

HTTP Status 404 - Database not found

type Status report

message Database not found

description The requested resource is not available.

Apache Tomcat/7.0.52 (Ubuntu)

localhost:8080/DemoServlets/HTML/NewIndex.html ip server/container lib folder. →

CMPE 282 HW 1

Stundet ID: 010034700

Stundet Name: Keertikeya Gupta

URL

Make sure URL contains proper path. E.g. **CMPE282KeertikeyaGupta700/rest/...**

HTTP Method

XML Content

```
<employee>
< id>3</ id>
<first_name>Bilbo</first_name>
<last_name>Baggins</last_name>
</employee>
```

thod=POST&content=<employee>%0D%0A< id>2<%2F id>%0D%0A<first_name>Bilbo<%2Ffirst_ ip server/container lib folder. →

Status 200: OK


```

kk@ubuntu: ~
keertikeyaDB          0.000GB
local                 0.000GB
mydb                  0.000GB
MongoDB Enterprise > use CMPE282KeertikeyaGupta700
switched to db CMPE282KeertikeyaGupta700
MongoDB Enterprise > show collections
employee
project
MongoDB Enterprise > db.project.find()
{ "_id" : 1, "name" : "ProjectX", "budget" : 12345.67 }
{ "_id" : 2, "name" : "Android", "budget" : 123 }
MongoDB Enterprise > db.employee.find()
{ "_id" : 1, "first_name" : "new", "last_name" : "object" }
{ "_id" : 2, "first_name" : "Alice", "last_name" : "Bob" }
MongoDB Enterprise > db.employee.find()
{ "_id" : 1, "first_name" : "new", "last_name" : "object" }
{ "_id" : 2, "first_name" : "Harry", "last_name" : "Potter" }
Software Center rise > db.project.find()
{ "_id" : 1, "name" : "ProjectX", "budget" : 12345.67 }
{ "_id" : 2, "name" : "NANDroid", "budget" : 99999 }
MongoDB Enterprise > db.project.find()
{ "_id" : 1, "name" : "ProjectX", "budget" : 12345.67 }
{ "_id" : 2, "name" : "NANDroid", "budget" : 99999 }
MongoDB Enterprise > db.employee.find()
{ "_id" : 1, "first_name" : "new", "last_name" : "object" }
{ "_id" : 2, "first_name" : "Bilbo", "last_name" : "Baggins" }
MongoDB Enterprise >

```


Delete Operations:

localhost:8080/DemoServlets/HTML/NewIndex.html

CMPE 282 HW 1

Stundet ID: 010034700

Stundet Name: Keertikeya Gupta

URL

Make sure URL contains proper path. E.g. CMPE282KeertikeyaGupta700/rest/...

HTTP Method

...yee%2F2&method=DELETE&content=<employee>%0D%0A<_id>2<%2F_id>%0D%0A<first_name>|

Status: 200 OK

localhost:8080/DemoServlets/HTML/NewIndex.html

CMPE 282 HW 1

Stundet ID: 010034700

Stundet Name: Keertikeya Gupta

URL

Make sure URL contains proper path. E.g. CMPE282KeertikeyaGupta700/rest/...

HTTP Method

Gupta700%2Frest%2Fproject%2F2&method=DELETE&content=<employee>%0D%0A<_id>2<%2F_i

Status: 200 OK

```
kk@ubuntu: ~  
switched to db CMPE282KeertikeyaGupta700  
MongoDB Enterprise > show collections  
employee  
project  
MongoDB Enterprise > db.project.find()  
{ "_id" : 1, "name" : "ProjectX", "budget" : 12345.67 }  
{ "_id" : 2, "name" : "Android", "budget" : 123 }  
MongoDB Enterprise > db.employee.find()  
{ "_id" : 1, "first_name" : "new", "last_name" : "object" }  
{ "_id" : 2, "first_name" : "Alice", "last_name" : "Bob" }  
MongoDB Enterprise > db.employee.find()  
{ "_id" : 1, "first_name" : "new", "last_name" : "object" }  
{ "_id" : 2, "first_name" : "Harry", "last_name" : "Potter" }  
MongoDB Enterprise > db.project.find()  
{ "_id" : 1, "name" : "ProjectX", "budget" : 12345.67 }  
{ "_id" : 2, "name" : "NANDroid", "budget" : 99999 }  
MongoDB Enterprise > db.project.find()  
{ "_id" : 1, "name" : "ProjectX", "budget" : 12345.67 }  
{ "_id" : 2, "name" : "NANDroid", "budget" : 99999 }  
MongoDB Enterprise > db.employee.find()  
{ "_id" : 1, "first_name" : "new", "last_name" : "object" }  
{ "_id" : 2, "first_name" : "Bilbo", "last_name" : "Baggins" }  
MongoDB Enterprise > db.project.find()  
{ "_id" : 1, "name" : "ProjectX", "budget" : 12345.67 }  
MongoDB Enterprise > db.employee.find()  
{ "_id" : 1, "first_name" : "new", "last_name" : "object" }  
MongoDB Enterprise >
```

Known Issues:

Session manage has not been implemented fully, so there are a few client side errors.

E.g. After a successful PUT operation, if you hit the back button in the browser and repeat the same PUT operation, it will still give a success message though actually no data is being inserted into the database.

Additional unique design feature:

Made the client by myself, and will be working on it to make it better.