

**Q1.**

- a. List technologies, software (including version), and platforms for dev tools, REST client, REST server, and NoSQL database.
- b. How did you build your REST server?
- c. Is the format of the data object based on XML or JSON?
- d. A sample HTTP request URI and request body for POST to create a new employee based on the XML format or JSON format (depending on your answer to c). Also indicate if there is any additional setup (e.g., HTTP header, etc.).
- e. If the NoSQL needs to create DB objects beforehand, such as Cassandra, include the script to create DB objects.

**Answers:**

a.

**Dev tools:**

Eclipse Java EE IDE for Web Developers.  
Version: Neon.3 Release (4.6.3)  
on  
MacOS Sierra 10.12.6

**REST Client:**

curl 7.54.0 (x86\_64-apple-darwin16.0) libcurl/7.54.0  
SecureTransport zlib/1.2.8  
on  
MacOS Sierra 10.12.6

**REST Server:**

Spring Boot v1.2.6, Tomcat 8.5  
on  
MacOS Sierra 10.12.6

**NoSQL database:**

MongoDB shell version v3.4.9  
on  
MacOS Sierra 10.12.6

b.

**REST Server:** Built a Spring Boot Application and then deploy to Tomcat 8.5 for development, Packaged as a jar accessible APIs on Tomcat 8.5 at port 8080

c. Based on **JSON** only.

d.

Request URI: POST /cmpe282Akshay673/rest/employee

Request body:

```
{  
    "id": 1,  
    "fname": "Abc",  
    "lname": "Def"  
}
```

No additional setup

**f. MongoDB script:** No script needed

**Q2:**

**Functionality Matrix**

| <b>HTTP Method + URI</b>    | <b>Status</b> |
|-----------------------------|---------------|
| GET /.../rest/employee/m    | <b>done</b>   |
| GET /.../rest/project/n     | <b>done</b>   |
| POST /.../rest/employee     | <b>done</b>   |
| POST /.../rest/project      | <b>done</b>   |
| PUT /.../rest/employee/m    | <b>done</b>   |
| PUT /.../rest/project/n     | <b>done</b>   |
| DELETE /.../rest/employee/m | <b>done</b>   |
| DELETE /.../rest/project/n  | <b>done</b>   |
| GET /.../rest/employee      | <b>done</b>   |
| GET /.../rest/project       | <b>done</b>   |

## 1. GET ../../rest/employee/m

### Before:

```
[> use cmpe282Akshay673 ]
switched to db cmpe282Akshay673
[> db.employee.find() ]
{ "_id" : 1, "_class" : "com.amishra.model.Employee", "fname" : "Akshay", "lname" : "Mishra" }
> □
```

### Error:

```
[~ $curl -v -X GET http://localhost:8080/cmpe282Akshay673/rest/employee/2
Note: Unnecessary use of -X or --request, GET is already inferred.
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> GET /cmpe282Akshay673/rest/employee/2 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
>
< HTTP/1.1 404 Not Found
< Server: Apache-Coyote/1.1
< Content-Length: 0
< Date: Tue, 26 Sep 2017 02:01:02 GMT
<
* Connection #0 to host localhost left intact
~ $■
```

### Success:

```
[~ $curl -v -X GET http://localhost:8080/cmpe282Akshay673/rest/employee/1
Note: Unnecessary use of -X or --request, GET is already inferred.
*   Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> GET /cmpe282Akshay673/rest/employee/1 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
>
< HTTP/1.1 200 OK
< Server: Apache-Coyote/1.1
< Content-Type: application/json;charset=UTF-8
< Transfer-Encoding: chunked
< Date: Tue, 26 Sep 2017 02:00:35 GMT
<
* Connection #0 to host localhost left intact
{"id":1,"fname":"Akshay","lname":"Mishra"}~ $
```

## After:

```
[>
[> db.employee.find()
{ "_id" : 1, "_class" : "com.amishra.model.Employee", "fname" : "Akshay", "lname" : "Mishra" }
>
```

## 2. GET ../../rest/project/n

### Before:

```
[> use cmpe282Akshay673
switched to db cmpe282Akshay673
[> db.project.find()
{ "_id" : 1, "_class" : "com.amishra.model.Project", "name" : "Project1", "budget" : 1000
.010009765625 }
> █
```

### Error:

```
[~ $curl -v -X GET http://localhost:8080/cmpe282Akshay673/rest/project/2
Note: Unnecessary use of -X or --request, GET is already inferred.
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> GET /cmpe282Akshay673/rest/project/2 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
>
< HTTP/1.1 404 Not Found
< Server: Apache-Coyote/1.1
< Content-Length: 0
< Date: Tue, 26 Sep 2017 02:30:07 GMT
<
* Connection #0 to host localhost left intact
~ $ █
```

### Success:

```
[~ $curl -v -X GET http://localhost:8080/cmpe282Akshay673/rest/project/1
Note: Unnecessary use of -X or --request, GET is already inferred.
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> GET /cmpe282Akshay673/rest/project/1 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
>
< HTTP/1.1 200 OK
< Server: Apache-Coyote/1.1
< Content-Type: application/json; charset=UTF-8
< Transfer-Encoding: chunked
< Date: Tue, 26 Sep 2017 02:29:07 GMT
<
* Connection #0 to host localhost left intact
{"id":1,"name":"Project1","budget":1000.01}~ $
```

## After:

```
[> use cmpe282Akshay673
switched to db cmpe282Akshay673
[> db.project.find()
{ "_id" : 1, "_class" : "com.amishra.model.Project", "name" : "Project1", "budget" : 1000.010009765625 }
>
```

### 3. POST /.../rest/employee

#### Before:

```
[Server has startup warnings:
2017-09-25T09:45:07.367-0700 I CONTROL [initandlisten]
2017-09-25T09:45:07.367-0700 I CONTROL [initandlisten] ** WARNING: Access control is not
enabled for the database.
2017-09-25T09:45:07.367-0700 I CONTROL [initandlisten] **          Read and write access
to data and configuration is unrestricted.
2017-09-25T09:45:07.367-0700 I CONTROL [initandlisten] ** WARNING: You are running this
process as the root user, which is not recommended.
2017-09-25T09:45:07.367-0700 I CONTROL [initandlisten]
2017-09-25T09:45:07.367-0700 I CONTROL [initandlisten]
2017-09-25T09:45:07.367-0700 I CONTROL [initandlisten] ** WARNING: soft rlimits too low.
Number of files is 256, should be at least 1000
> show dbs
admin 0.000GB
local 0.000GB
[>
```

#### Success:

```
Last login: Mon Sep 25 15:16:54 on ttys001
You have mail.
[~ $curl -v -X POST -H "Content-Type:application/json" -d '{"id":1, "fname": "Akshay", "lname": "Mishra"}' http
://localhost:8080/cmpe282Akshay673/rest/employee
Note: Unnecessary use of -X or --request, POST is already inferred.
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> POST /cmpe282Akshay673/rest/employee HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
> Content-Type:application/json
> Content-Length: 50
>
* upload completely sent off: 50 out of 50 bytes
< HTTP/1.1 201 Created
< Server: Apache-Coyote/1.1
< Location: /rest/employees/1
< Content-Type: application/json; charset=UTF-8
< Transfer-Encoding: chunked
< Date: Tue, 26 Sep 2017 01:55:01 GMT
<
* Connection #0 to host localhost left intact
{"id":1,"fname":"Akshay","lname":"Mishra"}~ $
```

#### Error:



```
[~ $curl -v -X POST -H "Content-Type:application/json" -d '{"id" :1, "fname" : "Akshay", "lname" : "Mishra" }' http]
://localhost:8080/cmpe282Akshay673/rest/employee
Note: Unnecessary use of -X or --request, POST is already inferred.
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> POST /cmpe282Akshay673/rest/employee HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
> Content-Type:application/json
> Content-Length: 50
>
* upload completely sent off: 50 out of 50 bytes
< HTTP/1.1 409 Conflict
< Server: Apache-Coyote/1.1
< Content-Length: 0
< Date: Tue, 26 Sep 2017 01:57:08 GMT
<
* Connection #0 to host localhost left intact
~ $
```

## After:

```
> show dbs
admin 0.000GB
cmpe282Akshay673 0.000GB
local 0.000GB
>
>
> use cmpe282Akshay673
switched to db cmpe282Akshay673
>
>
> show collections
employee
>
>
>
> db.employee.find();
{ "_id" : 1, "_class" : "com.amishra.model.Employee", "fname" : "Akshay", "lname" : "Mishra" }
>
```

## 4. POST /.../rest/project

## Before:

```
[> use cmpe282Akshay673
switched to db cmpe282Akshay673
[> show collections
employee
> █
```

## Success:

```
[~ $curl -v -X POST -H "Content-Type:application/json" -d '{"id":1, "name": "Project1", "budget": "1000.01"}' h]
http://localhost:8080/cmpe282Akshay673/rest/project
Note: Unnecessary use of -X or --request, POST is already inferred.
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> POST /cmpe282Akshay673/rest/project HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
> Content-Type:application/json
> Content-Length: 53
>
* upload completely sent off: 53 out of 53 bytes
< HTTP/1.1 201 Created
< Server: Apache-Coyote/1.1
< Location: /rest/project/1
< Content-Type: application/json; charset=UTF-8
< Transfer-Encoding: chunked
< Date: Tue, 26 Sep 2017 02:22:39 GMT
<
* Connection #0 to host localhost left intact
{"id":1,"name":"Project1","budget":1000.01}~ $ █
```

## Error:

```
[~ $curl -v -X POST -H "Content-Type:application/json" -d '{"id" :1, "fname" : "Akshay", "lname" : "Mishra" }' http]
://localhost:8080/cmpe282Akshay673/rest/employee
Note: Unnecessary use of -X or --request, POST is already inferred.
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> POST /cmpe282Akshay673/rest/employee HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
> Content-Type:application/json
> Content-Length: 50
>
* upload completely sent off: 50 out of 50 bytes
< HTTP/1.1 409 Conflict
< Server: Apache-Coyote/1.1
< Content-Length: 0
< Date: Tue, 26 Sep 2017 01:57:08 GMT
<
* Connection #0 to host localhost left intact
~ $
```

## After:

```
[>
[> show collections
employee
project
[> db.project.find()
{ "_id" : 1, "_class" : "com.amishra.model.Project", "name" : "Project1", "budget" : 1000
.010009765625 }
>
```

## 5. PUT ../../rest/employee/m

### Before:

```
> show dbs
admin          0.000GB
cmpe282Akshay673 0.000GB
local          0.000GB
>
>
> use cmpe282Akshay673
switched to db cmpe282Akshay673
>
>
> show collections
employee
>
>
>
> db.employee.find();
{ "_id" : 1, "_class" : "com.amishra.model.Employee", "fname" : "Akshay", "lname" : "Mishra" }
> █
```

### Error:

```
[~ $curl -v -X PUT -H "Content-Type:application/json" -d'{"id" :2, "fname" : "Akshay2", "lname" : "Mishra2" }' http://localhost:8080/cmpe282Akshay673/rest/employee/1
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> PUT /cmpe282Akshay673/rest/employee/1 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
> Content-Type:application/json
> Content-Length: 52
>
* upload completely sent off: 52 out of 52 bytes
< HTTP/1.1 404 Not Found
< Server: Apache-Coyote/1.1
< Content-Length: 0
< Date: Tue, 26 Sep 2017 02:08:33 GMT
<
* Connection #0 to host localhost left intact
~ $ █
```

### Success:

```
[~ $curl -v -X PUT -H "Content-Type:application/json" -d'{"id" :1, "fname" : "Akshay2", "lname" : "Mishra2" }' http://localhost:8080/cmpe282Akshay673/rest/employee/1
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> PUT /cmpe282Akshay673/rest/employee/1 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
> Content-Type:application/json
> Content-Length: 52
>
* upload completely sent off: 52 out of 52 bytes
< HTTP/1.1 200 OK
< Server: Apache-Coyote/1.1
< Content-Type: application/json;charset=UTF-8
< Transfer-Encoding: chunked
< Date: Tue, 26 Sep 2017 02:03:50 GMT
<
* Connection #0 to host localhost left intact
{"id":1,"fname":"Akshay2","lname":"Mishra2"}~ $
```

```
[~ $curl -v -X PUT -H "Content-Type:application/json" -d'{"id" :1, "fname" : "Akshay3"}' http://localhost:8080/cmpe282Akshay673/rest/employee/1
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> PUT /cmpe282Akshay673/rest/employee/1 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
> Content-Type:application/json
> Content-Length: 30
>
* upload completely sent off: 30 out of 30 bytes
< HTTP/1.1 200 OK
< Server: Apache-Coyote/1.1
< Content-Type: application/json;charset=UTF-8
< Transfer-Encoding: chunked
< Date: Tue, 26 Sep 2017 02:05:03 GMT
<
* Connection #0 to host localhost left intact
{"id":1,"fname":"Akshay3","lname":"Mishra2"}~ $
```

## After Full Update Success:

```
> db.employee.find()
{ "_id" : 1, "_class" : "com.amishra.model.Employee", "fname" : "Akshay2", "lname" : "Mishra2" }
>
```

## After Partial Update Success:

```
[> db.employee.find()
{ "_id" : 1, "_class" : "com.amishra.model.Employee", "fname" : "Akshay3", "lname" : "Mis
hra2" }
> █
```

## 6. PUT ../../rest/project/n

### Before:

```
[> use cmpe282Akshay673
switched to db cmpe282Akshay673
[> db.project.find()
{ "_id" : 1, "_class" : "com.amishra.model.Project", "name" : "Project3", "budget" : 88.0
199966430664 }
> █
```

### Error:

```
[~ $curl -v -X PUT -H "Content-Type:application/json" -d '{"id" :2, "name" : "Project3", "budget" : "1000.02" }' ht
tp://localhost:8080/cmpe282Akshay673/rest/project/1
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> PUT /cmpe282Akshay673/rest/project/1 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
> Content-Type:application/json
> Content-Length: 53
>
* upload completely sent off: 53 out of 53 bytes
< HTTP/1.1 404 Not Found
< Server: Apache-Coyote/1.1
< Content-Length: 0
< Date: Tue, 26 Sep 2017 02:33:44 GMT
<
* Connection #0 to host localhost left intact
~ $█
```

### Success:

```
[~ $curl -v -X PUT -H "Content-Type:application/json" -d'{"id" :1, "name" : "Project2", "budget" : "188.02" }' http://localhost:8080/cmpe282Akshay673/rest/project/1
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> PUT /cmpe282Akshay673/rest/project/1 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
> Content-Type:application/json
> Content-Length: 52
>
* upload completely sent off: 52 out of 52 bytes
< HTTP/1.1 200 OK
< Server: Apache-Coyote/1.1
< Content-Type: application/json;charset=UTF-8
< Transfer-Encoding: chunked
< Date: Tue, 26 Sep 2017 02:45:27 GMT
<
* Connection #0 to host localhost left intact
{"id":1,"name":"Project2","budget":188.02}~ $
```

```
[~ $curl -v -X PUT -H "Content-Type:application/json" -d'{"id" :1, "budget" : "2188.02" }' http://localhost:8080/cmpe282Akshay673/rest/project/1
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> PUT /cmpe282Akshay673/rest/project/1 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
> Content-Type:application/json
> Content-Length: 32
>
* upload completely sent off: 32 out of 32 bytes
< HTTP/1.1 200 OK
< Server: Apache-Coyote/1.1
< Content-Type: application/json;charset=UTF-8
< Transfer-Encoding: chunked
< Date: Tue, 26 Sep 2017 02:46:49 GMT
<
* Connection #0 to host localhost left intact
{"id":1,"name":"Project2","budget":2188.02}~ $
```

## After Full update Success:

```
> db.project.find()
{ "_id" : 1, "_class" : "com.amishra.model.Project", "name" : "Project2", "budget" : 188.02000427246094 }
>
```

## After Partial update Success:

```
[> db.project.find()
{ "_id" : 1, "_class" : "com.amishra.model.Project", "name" : "Project2", "budget" : 2188
.02001953125 }
> █
```

## 7. DELETE ../rest/employee/m

### Before:

```
[> use cmpe282Akshay673
switched to db cmpe282Akshay673
[> db.employee.find()
{ "_id" : 1, "_class" : "com.amishra.model.Employee", "fname" : "Akshay3", "lname" : "Mis
hra2" }
> █
```

### Error:

```
[~ $curl -v -X DELETE http://localhost:8080/cmpe282Akshay673/rest/employee/2
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> DELETE /cmpe282Akshay673/rest/employee/2 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
>
< HTTP/1.1 404 Not Found
< Server: Apache-Coyote/1.1
< Content-Length: 0
< Date: Tue, 26 Sep 2017 02:11:07 GMT
<
* Connection #0 to host localhost left intact
~ $ █
```



## Success:

```
[~ $curl -v -X DELETE http://localhost:8080/cmpe282Akshay673/rest/employee/1
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> DELETE /cmpe282Akshay673/rest/employee/1 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
>
< HTTP/1.1 200 OK
< Server: Apache-Coyote/1.1
< Content-Length: 0
< Date: Tue, 26 Sep 2017 02:10:24 GMT
<
* Connection #0 to host localhost left intact
~ $
```

## After:

```
[>
[>
[> db.employee.find()
>
```

## 8. DELETE ../../rest/project/n

### Before:

```
[> use cmpe282Akshay673
switched to db cmpe282Akshay673
[> db.project.find()
{ "_id" : 1, "_class" : "com.amishra.model.Project", "name" : "Project2", "budget" : 2188
.02001953125 }
>
```

### Error:

```
[~ $curl -v -X DELETE http://localhost:8080/cmpe282Akshay673/rest/project/2
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> DELETE /cmpe282Akshay673/rest/project/2 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
>
< HTTP/1.1 404 Not Found
< Server: Apache-Coyote/1.1
< Content-Length: 0
< Date: Tue, 26 Sep 2017 02:48:43 GMT
<
* Connection #0 to host localhost left intact
~ $
```

## Success:

```
[~ $curl -v -X DELETE http://localhost:8080/cmpe282Akshay673/rest/project/1
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> DELETE /cmpe282Akshay673/rest/project/1 HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
>
< HTTP/1.1 200 OK
< Server: Apache-Coyote/1.1
< Content-Length: 0
< Date: Tue, 26 Sep 2017 02:48:12 GMT
<
* Connection #0 to host localhost left intact
~ $
```

## After:

```
[~
[>
[> db.project.find()
>
```

## 9. GET ../../rest/employee

### Before:

```
|> use cmpe282Akshay673
switched to db cmpe282Akshay673
|> db.employee.find()
{ "_id" : 1, "_class" : "com.amishra.model.Employee", "fname" : "Akshay", "lname" : "Mishra" }
{ "_id" : 2, "_class" : "com.amishra.model.Employee", "fname" : "Akshay2", "lname" : "Mishra2" }
> □
```

### Success:

```
|~ $curl -v -X GET http://localhost:8080/cmpe282Akshay673/rest/employee
Note: Unnecessary use of -X or --request, GET is already inferred.
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> GET /cmpe282Akshay673/rest/employee HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
>
< HTTP/1.1 200 OK
< Server: Apache-Coyote/1.1
< Content-Type: application/json;charset=UTF-8
< Transfer-Encoding: chunked
< Date: Tue, 26 Sep 2017 02:15:14 GMT
<
* Connection #0 to host localhost left intact
[{"id":1,"fname":"Akshay","lname":"Mishra"}, {"id":2,"fname":"Akshay2","lname":"Mishra2"}]~ $
```

## Error: (some exception)

```
[~ $curl -v -X GET http://localhost:8080/cmpe282Akshay673/rest/employee
Note: Unnecessary use of -X or --request, GET is already inferred.
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> GET /cmpe282Akshay673/rest/employee HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
>
< HTTP/1.1 404 Not Found
< Server: Apache-Coyote/1.1
< Content-Length: 0
< Date: Tue, 26 Sep 2017 03:36:21 GMT
<
* Connection #0 to host localhost left intact
~ $
```

## After:

```
[> db.employee.find()
{ "_id" : 1, "_class" : "com.amishra.model.Employee", "fname" : "Akshay", "lname" : "Mishra" }
{ "_id" : 2, "_class" : "com.amishra.model.Employee", "fname" : "Akshay2", "lname" : "Mishra2" }
>
```

## 10. GET ../../rest/project

### Before:

```
[> use cmpe282Akshay673
switched to db cmpe282Akshay673
[> db.project.find()
{ "_id" : 1, "_class" : "com.amishra.model.Project", "name" : "Project1", "budget" : 1000.010009765625 }
>
```

## Success:

```
[~ $ curl -v -X GET http://localhost:8080/cmpe282Akshay673/rest/project
Note: Unnecessary use of -X or --request, GET is already inferred.
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> GET /cmpe282Akshay673/rest/project HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
>
< HTTP/1.1 200 OK
< Server: Apache-Coyote/1.1
< Content-Type: application/json; charset=UTF-8
< Transfer-Encoding: chunked
< Date: Tue, 26 Sep 2017 02:50:25 GMT
<
* Connection #0 to host localhost left intact
[{"id":1,"name":"Project1","budget":1000.01},{ "id":2,"name":"Project2","budget":2000.01}]~ $
```

## Error:

```
[~ $ curl -v -X GET http://localhost:8080/cmpe282Akshay673/rest/project
Note: Unnecessary use of -X or --request, GET is already inferred.
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 8080 (#0)
> GET /cmpe282Akshay673/rest/project HTTP/1.1
> Host: localhost:8080
> User-Agent: curl/7.54.0
> Accept: */*
>
< HTTP/1.1 404 Not Found
< Server: Apache-Coyote/1.1
< Content-Length: 0
< Date: Tue, 26 Sep 2017 05:04:41 GMT
<
* Connection #0 to host localhost left intact
~ $
```

### After:

```
[> use cmpe282Akshay673
switched to db cmpe282Akshay673
[> db.project.find()
{ "_id" : 1, "_class" : "com.amishra.model.Project", "name" : "Project1", "budget" : 1000
.010009765625 }
> █
```

**Known issues:** None

### Additional unique design or features:

1. It uses a DAO to communicate with the DB, which adds another layer of abstraction for the application logic, clearly separating the concerns related to DB access from the controller.
2. No additional script is needed to create the collection in Mongo, At the time of insert, the collection will be created if not present already for that particular model.
3. Custom Exceptions defined, which send back a user-friendly message. These exceptions can also prevent data corruption. For example, a POST request with negative id will render a response that an id cannot be negative.