

### Homework 3

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Course: CS-544-01

Time:

Date: 11/05/2019

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1. Assumptions:

- a. In sensor-data it is assumed that after given interval of time sensor will read a value.  
Sensors can malfunction i.e. not necessarily sensors will read a value after certain given period, in projects 1-3 there is no functionality to check if the sensor is reading data on consistent period.

Inconsistencies:

- a. No check for “Add” functionality to check if previous record exists. Records are overwritten.

```
2. function temp(o){
  for (var prop in o){
    if (o.hasOwnProperty(prop)){
      mustacheFormattedData['people'].push({
        'key' : prop,
        'value' : o[prop]
      });
    }
  }
}
```

```
const view = `{{#people}}
{{key}} : {{value}}
{{/people}}
`;
return (mustache.render(view, o))
}
```

```
console.log(temp(obj));[iv]
```

3.

- a. The operations are not idempotent i.e. clicking button more than once or refreshing the page can cause same process to happen more than once for the same session  
E.g. in a payment gateway if pay button is clicked more than once then it is possible that user is charged more than once for a product.
- b. Making use of “requests status”.
  - i. Considering case of payment gateway, when the “pay-button” is clicked it will make a request (e.g. POST request) to the server and until the payment is successful, we can have the “post request status” as “pending” for that particular sessionID.
  - ii. If we check the request status every time a pay button is clicked,  
Make a request only when status is empty/not busy and stop a request when status is in pending state with appropriate response message to the user stating “initiated transaction is under process”[i]

4.

- a. Select Boxes:
  - i. In the HTML forms, if given multiple options are many i.e. user will need to keep scrolling the form to select the option e.g. list of all the countries in the world and user needs to select one of the them, then we should use select boxes. So, user will not need to scroll through the webpage
- b. Radio Buttons:
  - i. In the HTML forms, given a multiple choice of options, if users’ needs to select just one of the options then we need to use radio buttons
- c. Checkboxes:
  - i. In the HTML forms, given a multiple choice of options, if users’ needs to select just one or more of the options then we need to use checkboxes

5.

/\*Assuming listing of the different pizza/toppings does require any customer login\*/

- a. The URL
  - i. “/fkey/cID/pizza”
  - ii. “/fkey/cID/pizzatoppings”
  - iii. “/fkey/cID/buildpizza?\_pie=?&\_size=?”
  - iv. “/fkey/cID/addtopping?\_pid=?&\_types=?”
  - v. “/fkey/cID/removetopping?\_pid=?&\_types=?”
  - vi. “/fkey/cID/deletepizza?\_pid=?”
  - vii. “/fkey/cID/getDetails?\_pid=?”
  - viii. “/fkey/cID/getimages?\_pid=?”

ix. “/fkey/cID/statusBaking?\_pid=?”

b. The HTTP method used

- i. Get method is used to get all the data about pizza
- ii. Get method to display all the toppings
- iii. Post method to generate a new pizza order as more than one pizza can be ordered so post is used
- iv. Patch/Post both methods can be used to add toppings to the pizza as it is just updating the current order
- v. Delete to delete the toppings
- vi. Delete to delete the pizza
- vii. Get to retrieve the details about the pizza
- viii. Get to get the images of pizza
- ix. Put to change the status of the order to Dispatch for baking, as put is idempotent

c. Descriptions of parameters and body

fkey: franchisee key, cID: customer key

- i. To get the list of all the pizzas URL will contain a fkey, cID and call for function which displays all the pizzas(/pizza)
- ii. To get the list of all the pizza toppings URL will contain a fkey, cID and call for function which displays all the pizzas toppings (/pizzatoppings)
- iii. To build a pizza a fkey,cID, method that builds pizza with parameters of pie type and size (/buildpizza?\_pie=?&\_size=?)
- iv. To add toppings to current pizza order a function of addtoppings with parameters of pid and topping type needs to be invoked (/addtopping? \_pid=?& \_types=?)
- v. To remove topping a function with removeTopping method needs to be called with parameters of pid and topping type (/removetopping? \_pid=?& \_types=?)
- vi. To delete pizza pid with a function that deletes the pizza from the order(/deletepizza? \_pid=?)
- vii. To get details about the pizza function to getDetails and pid as parameter (/getDetails? \_pid=?)
- viii. To get images about the pizza function to getImages and pid as parameter (getimages? \_pid=?)
- ix. To change status to dispatch to bake a function to change status and pid (/statusBaking? \_pid=?)

d. Caching parameters.

- i. Must be cached as a public, must revalidate as pizza availability status may change, max -age can be one day  
**Cache-Control: public, max-age=86400, must-revalidate**
  - ii. Must be cached as a public, must revalidate as pizza toppings availability status may change, max -age can be one day  
**Cache-Control: public, max-age=86400, must-revalidate**
  - iii. Must be cached as a private, must revalidate, as user may add the following details to cart and order afterwards  
**Cache-Control: private, must-revalidate**
  - iv. Must be cached as a private, must revalidate, as user may add the following details to cart and order afterwards  
**Cache-Control: private, must-revalidate**
  - v. Must be cached as a private, must revalidate, as user may add the following details to cart and order afterwards  
**Cache-Control: private, must-revalidate**
  - vi. **No cache required as the deleting will be handled by order pizza cache (iii)**
  - vii. Must be cached as a public, must revalidate, max -age can be one day  
**Cache-Control: public, max-age=86400, must-revalidate**
  - viii. Must be cached as a public, max -age depends on the company as after how many days images will be changed assuming to be one day  
**Cache-Control: public, max-age=86400, must-revalidate**
  - ix. **Caching is not required**
- e. Handling of possible errors.
- i. If a customer adds pizza in cart and, goes offline and tries to checkout afterwards, the order must be checked if pizza is still available
  - ii. Check if pizzas or toppings are available at that particular franchisees
  - iii. URL works for all the browsers

6.

- a. The problem can be because of the intermediate caching and maybe his browser is getting direct access of the resource and client are not.
- b. For this he uses **Vary: User-Agent**.
- c. Vary header uniquely identifies a request – caches should only be used if the incoming request matches the vary information in cache[ii]

7.

- a. **False**, Persistent Connection is used instead of separate TCP connections as it reduces the network traffic[iii]
- b. **False**, two resources can have same URL for different resources
- c. **False**, it is not necessary, but it is common practice to have js in the head section
- d. **True**, if the CSS file is not same for all the HTML pages and should be reloaded with every different HTML page, then it is a good idea to have both CSS and HTML in same file. It decreases the page load time as all the required code is in same file.
- e. **True**, if cache doesn't have any other parameters set e.g. revalidate

## Reference

[i] (<https://www.quora.com/Why-dont-payment-gateway-pages-support-Back-Button-Refresh>, n.d.)

- [ii] (<https://blog.stackpath.com/accept-encoding-vary-important/>, n.d.)
- [iii] (<https://www.w3.org/Protocols/rfc2616/rfc2616-sec8.html>, n.d.)
- [iv] (<https://code-examples.net/en/q/8a39d6>, n.d.)