Restaurant Automation

Restauration

Desktop, Mobile, Web Application

Software Engineering - 14:332:452

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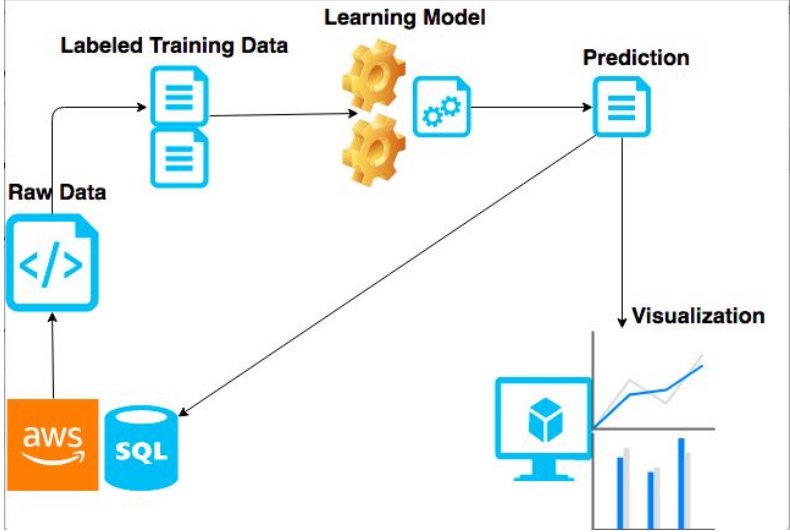
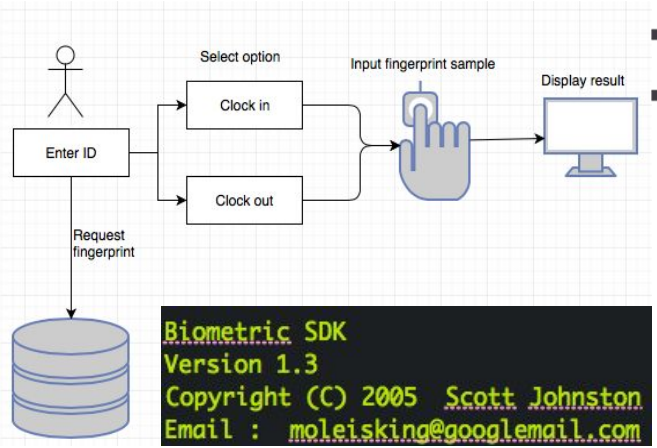
What is different?

- Biometric Recognition (Fingerprint)
- Braintree Payments
- Data mining

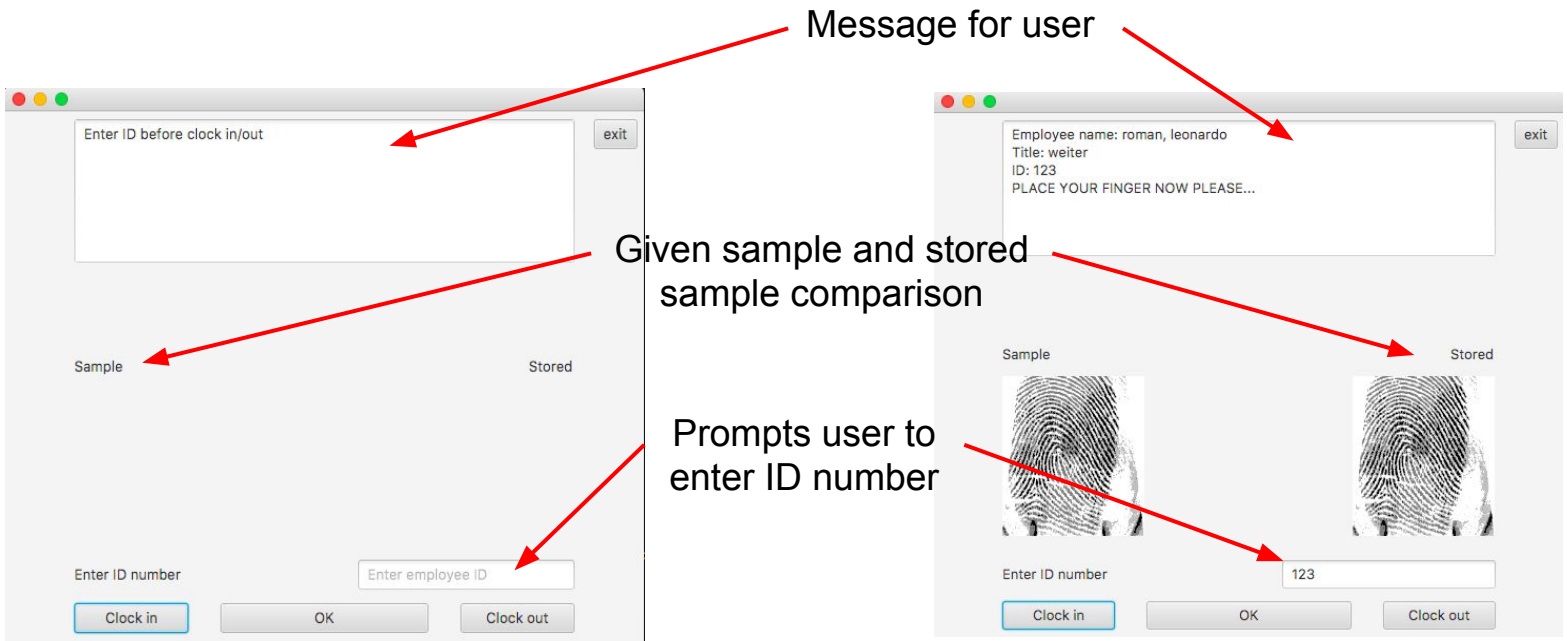




Braintree
A PayPal Company

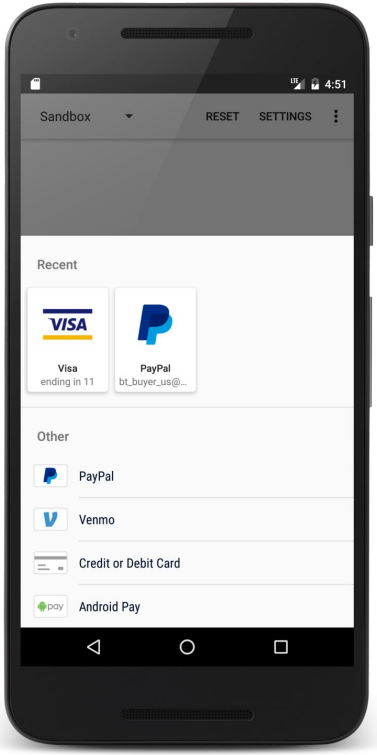
Clock in/out Device

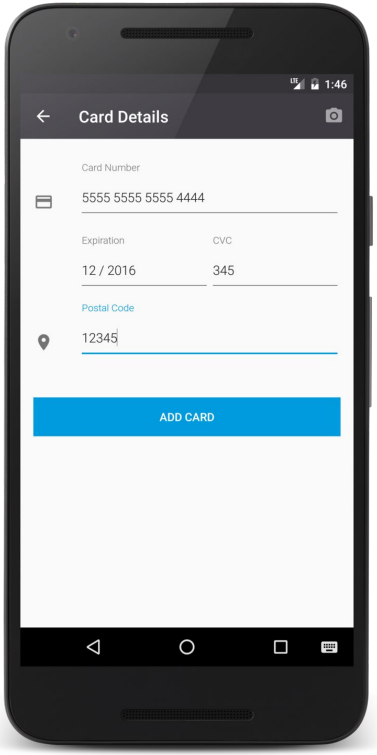
- Prompts user to enter ID number
- Retrieves credentials from DBMS as user tries to clock in or out
- Prompts user to place finger and takes the print sample
- If matched, clock in/out successful



Mobile Pay

- Ability to pay from table using Employee Tablet
- Utilizes BrainTree API to process payment
- Accepted payments include: Credit cards & Paypal (Venmo, Android Pay and other Methods future work)





Future Work

Problem:

- Managers over/under scheduling workers.
- Use of intuition/experience to make work schedule sometimes is not enough.
- Producing too much of an unpopular dish.
- Producing too little of a popular dish.

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Future Work

Intuition:

- Busy days may be caused by certain events such as:
  - Time of the day.
  - Day of the week.
  - Is a holyday.
  - Season of the year.
  - Weather
  - Trends.
- Some dishes may sell more during certain occasions such as:
  - Time of the day.
  - Customers similarities in taste.
  - Customer’s recommendations about the restaurant’s menu.
  - Waiters’ recommendations about particular dishe.

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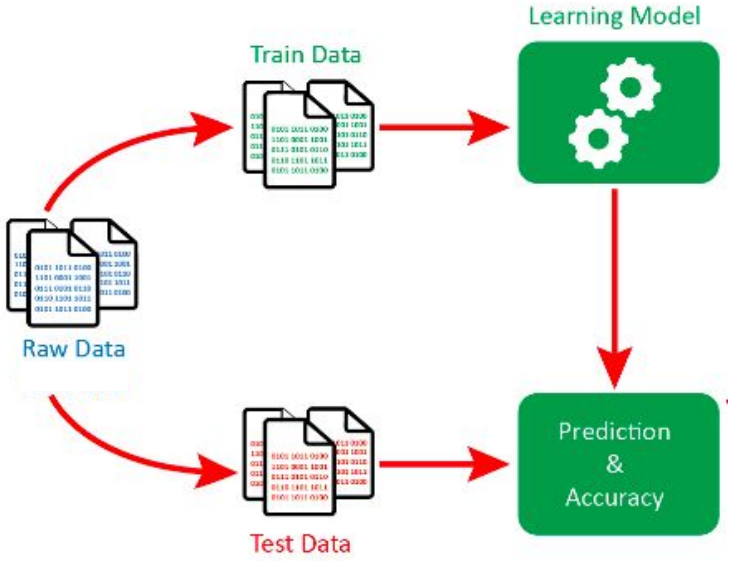
Future Work

Solution:

- To predict daily operations.
  - Decision Trees.
  - Random forests.
  - Neural networks.
- To find customers similarities.
  - K-nearest neighbor.
  - Stochastic Gradient Descents.
  - Apriori Algorithm (Frequent Itemsets)



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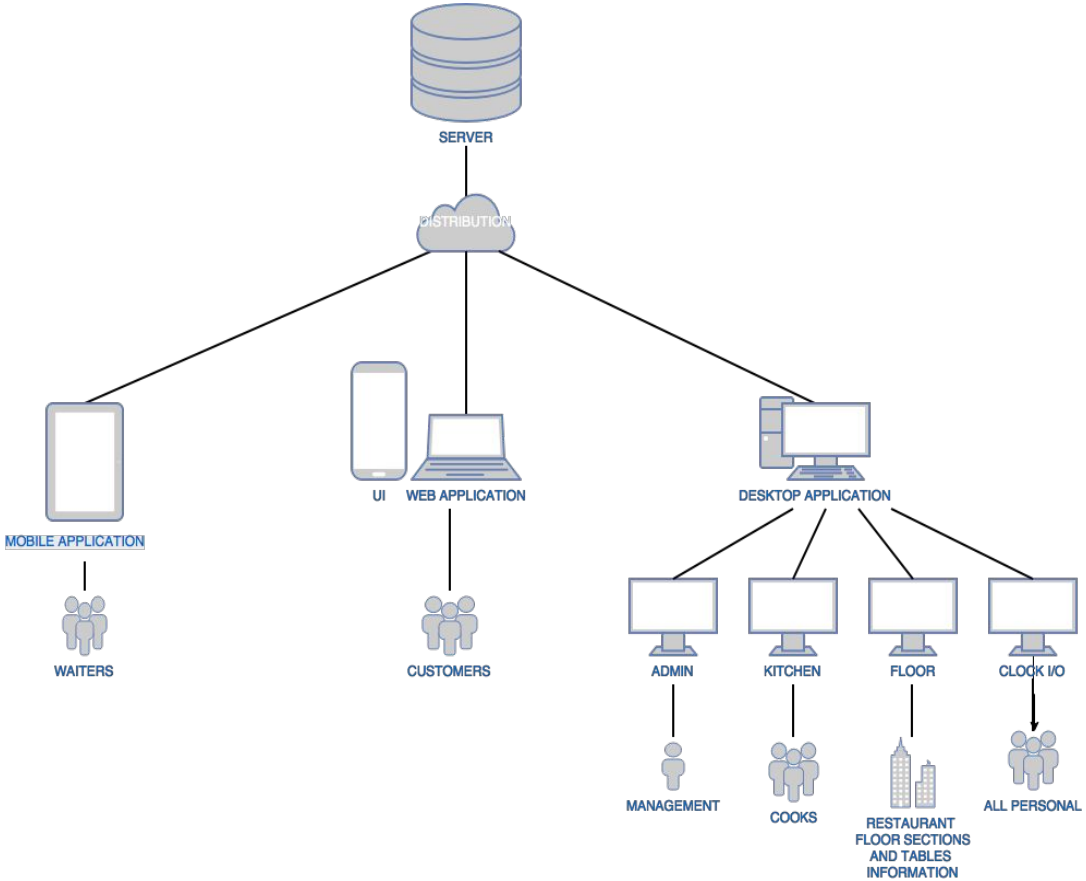
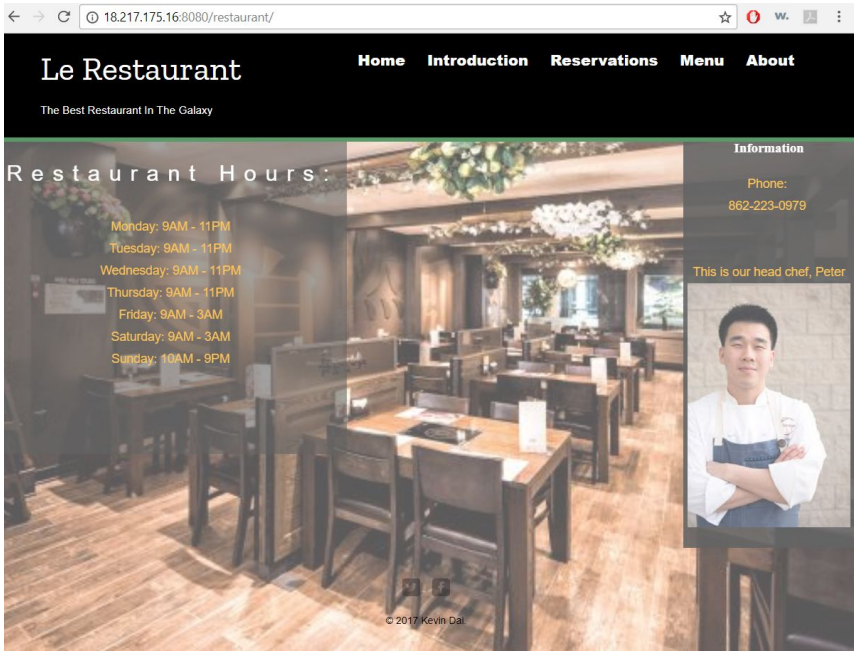
Architecture



DBMS access
AWS using
MySql)
Composed of
hree
ub-systems

Website



Homepage: Static page that includes basic description of the restaurant such as the phone number and hours of operation.

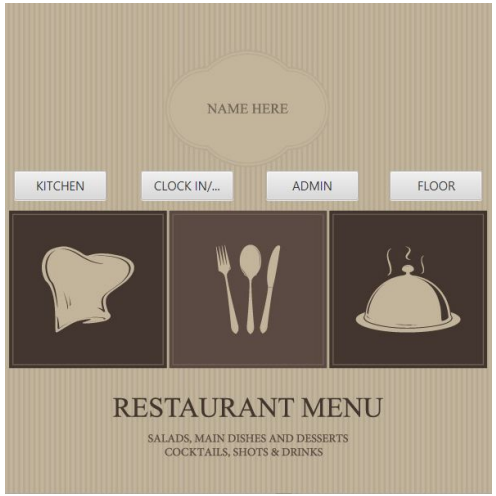
Introduction Page: Static page that consists of the breakdown of our team and links to our personal profiles. Also includes our github pages for the three applications.

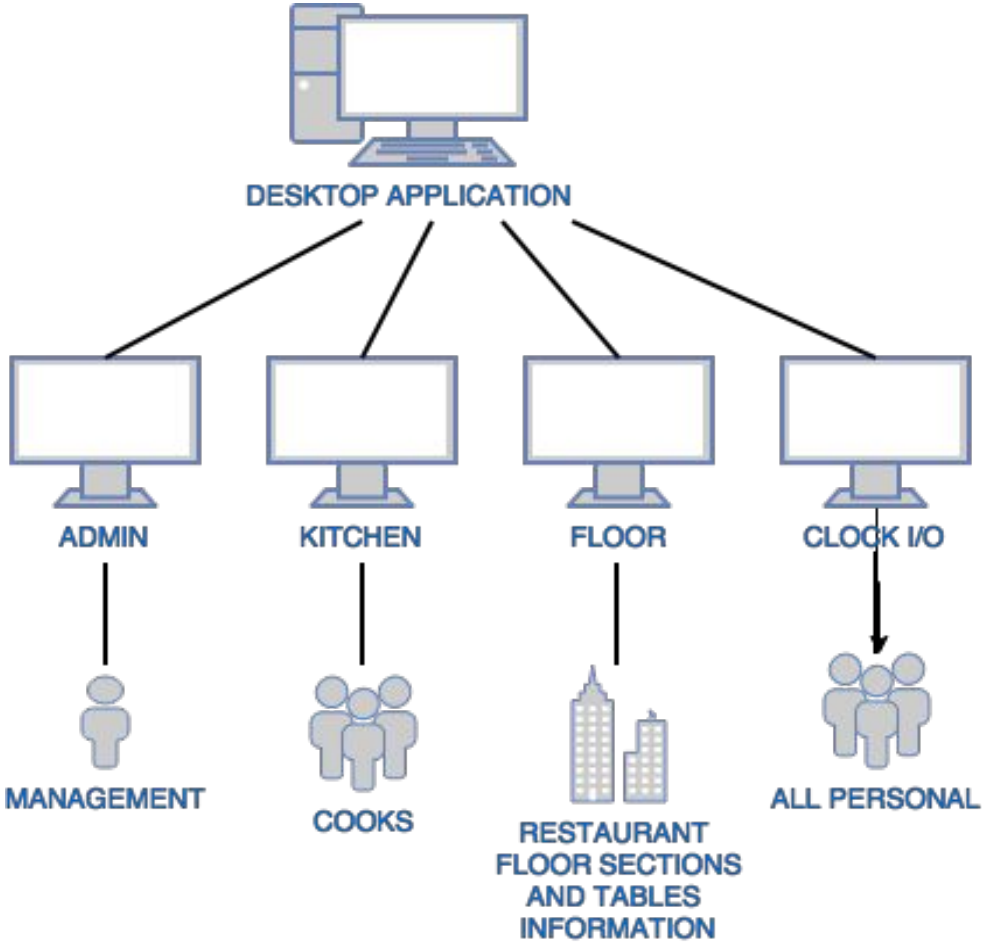
Menu Page: Uses DBMS to access the up to date menu and displays it. Therefore, if there are any changes to the menu such as an item being discontinued temporarily, the website will show the corresponding changes.
Has a takeout feature so customers can order off the menu and create a pick up order.

Reservation Page: Use DBMS to access and edit the reservations database accordingly.
Search, verify, create, and displays the reservations for today.
Current AWS Example Link:
http://18.217.175.16:8080/restaurant/

Desktop App

- Composed of sub-applications.
- Multithreaded (floor and kitchen)
- DBMS access.
- MVC structured.



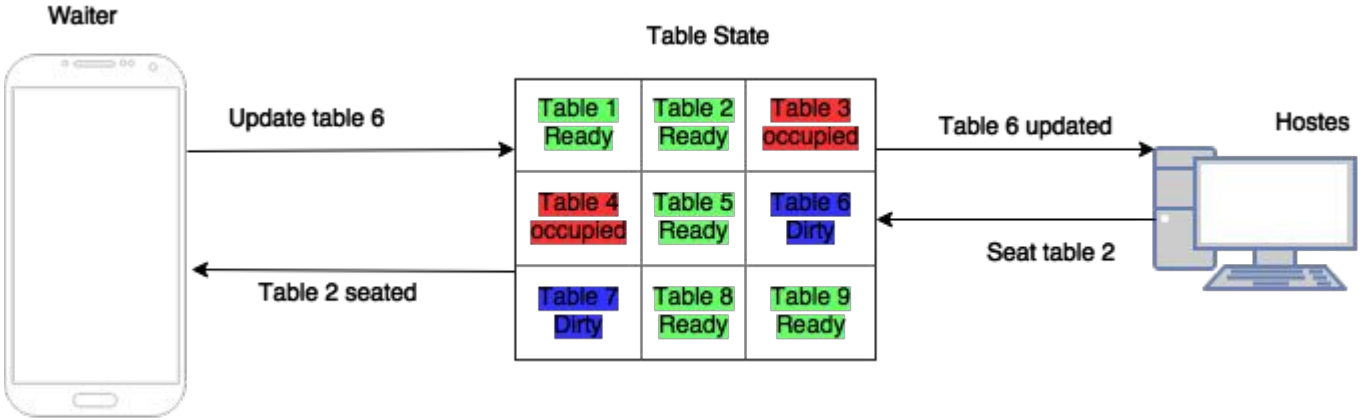


Mobile App

- Composed of activity classes
- Socket Communication(waiter-kitchen)
- DBMS access
- MVC structure

Floor-Waiter Network Communication

- Table state can be updated from ether desktop by hostess or mobile app by waiter.
- Updates are made through signals via sockets.



Kitchen-Waiter Communication

- Producer/consumer structure.
- Multithreaded one-to-one mapping.
- FIFO data structured.