



A CS9223 Cloud Computing project,  
NYU Tandon School of Engineering  
Under professor: Sambit Sahu

Team Members:

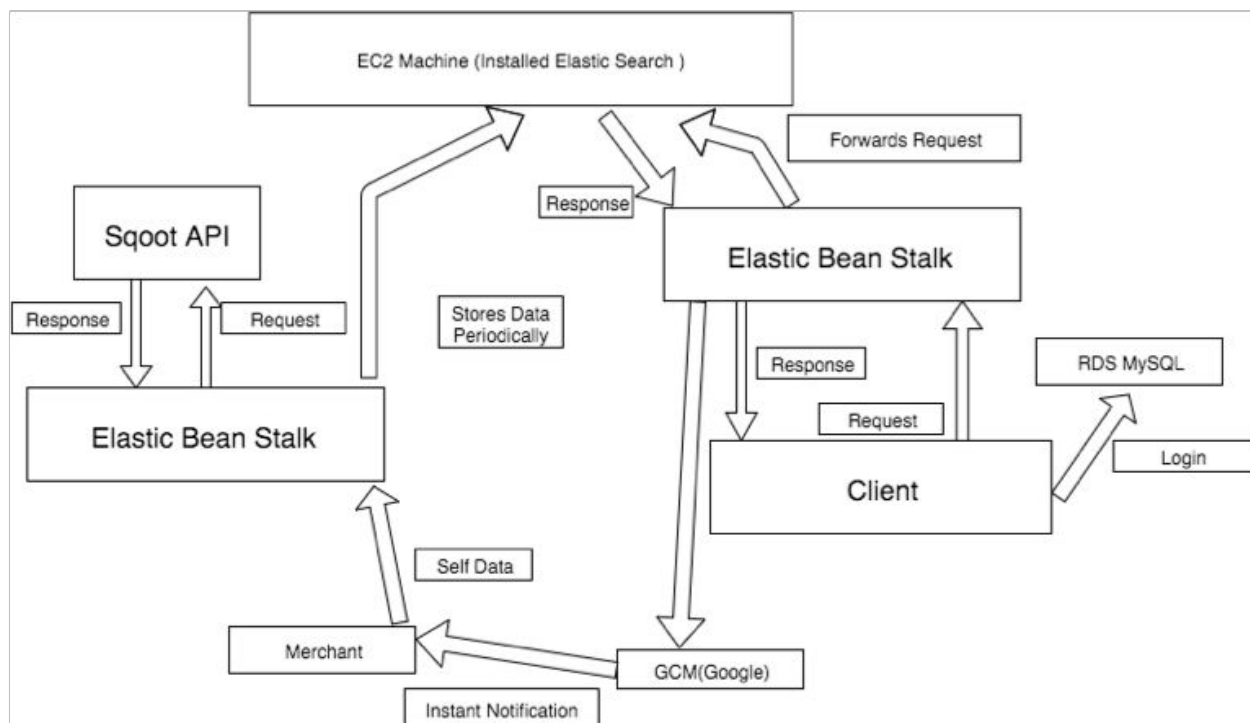
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NYU Tandon CS	NYU Tandon CS	NYU Tandon CS	NYU Tandon CS

## Description:

Shop It! is a cloud based mobile application for enhancing the shopping experience for users on the go. Our application can recommend best offers in nearby stores, deals in restaurants and best discounts on products based on your location. Project uses highly scalable and efficient Amazon services like SQS and SNS for ensuring high availability. For notifications, we have used Google Cloud Messaging (GCM) for real time service. We are using REST API for providing responses from backend Elasticsearch engine scanning through high amount of geocoded deals data ensuring minimum response time for users.

With this application users now have a power to reach beyond just an conventional shopping application. By registering as a merchant in the app and user can start own business or boost an existing one.

## Architecture:



## **Architecture Explained:**

Our whole application architecture consists of two Elastic Bean Stalk environment, one EC2 linux machine, a MYSQL database on RDS, a GCM service, a sqoot API and a client Android application. We have installed Elasticsearch on EC2 machine. The EBS on left hosts a cron job that periodically gets deals and coupons from sqoot API and stores on elastic search. Before storing we have mapped the geo locations so that later we can pass geo query to the environment. The right EBS hosts web service that queries the elastic search and returns result to clients. The web service only returns 10 results for every request. When the user try to see more result by dragging page on screen downwards, new request will automatically be made to webservice. For every new user registration or for login, credentials are saved on checked in RDS respectively. When a user buys some product from a merchant, a notification will be sent instantly to the merchant through GCM Notification service.

## **Project Main components:**

Entire project has been divided into four major units explained as below

### **Android Application (Developer Nitin):**

Shop It Android application developed as part of the project is the main frontend and client interaction point of our project. Application is a feature rich component and provides most common and useful features few of them with screenshots has been explained here .

The application provides two ways to sign up .

Using Facebook

Using Email Account.

The image shows a mobile application interface for 'NYC SHOP IT!'. At the top, there's a header with a cityscape background and the text 'NYC SHOP IT!' and '18th December, 2015'. Below this, there's a blue button with the Facebook logo and the text 'Log in with Facebook'. Underneath, the word 'or' is centered between two horizontal lines. Below the lines, there are two input fields: 'Email address' (with a pink border) and 'Password' (with a grey border). A large blue button with the text 'LOG IN' is positioned below the password field. At the bottom, there's a link that says 'Dont'have an account.. [SignUp here](#)'.

*Screen to sign up or login*

Name  
**abc**

Email address  
**abc@gmail.com**

Password  
...

Confirm Password  
...

**CONTINUE**

*Sign up Screen*

facebook

You must log in first.

Get Facebook for Android and browse faster.

Email or Phone

Password

**Log In**

**Create New Account**

[Forgot Password?](#) · [Help Center](#)

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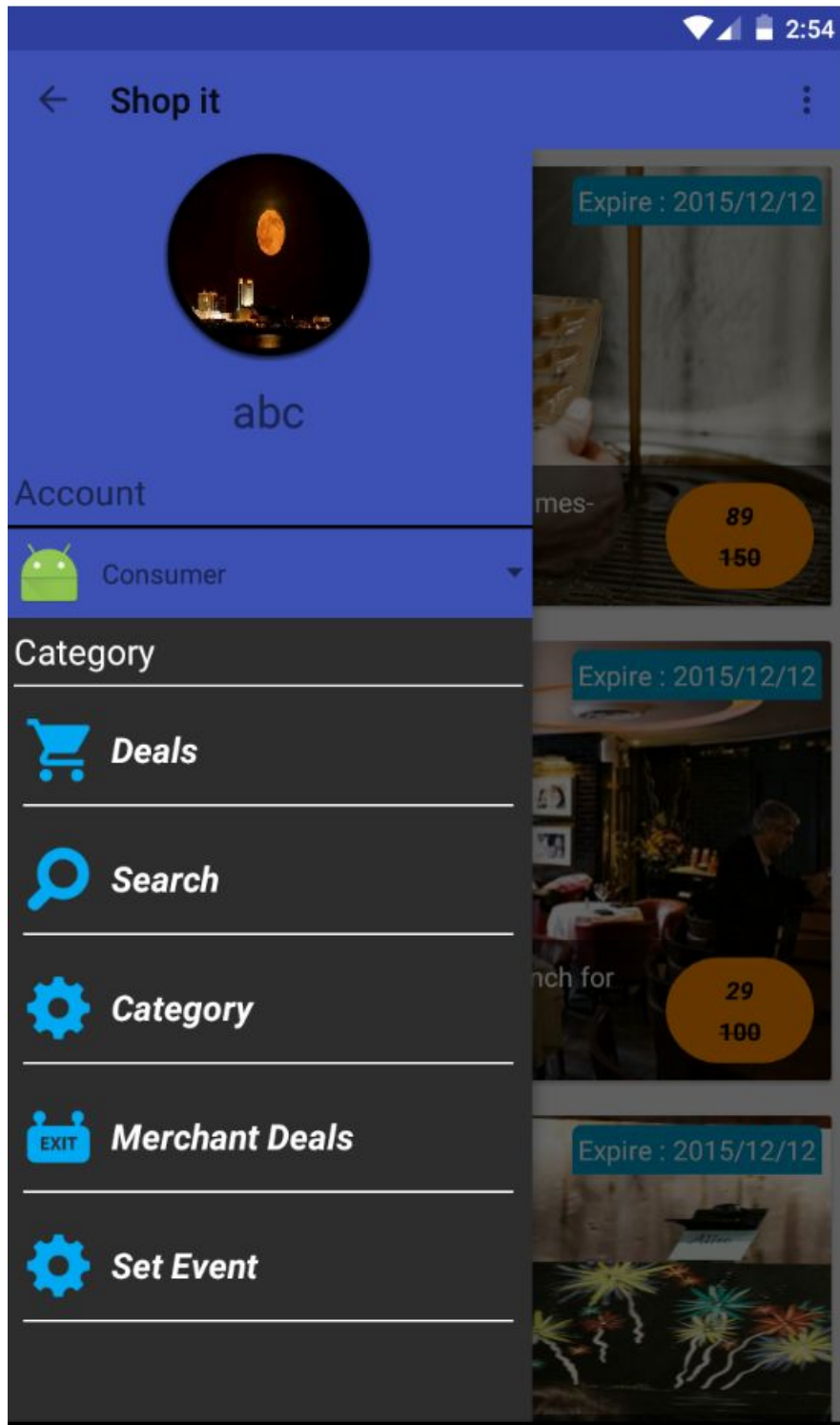
Facebook ©2015

*Facebook login Screen*

Whenever the user is registered a unique device id is created to send push notification to the user about the new deals. Once the user is logged in, the application automatically fetched the user's current location and provides local deals around him/her.



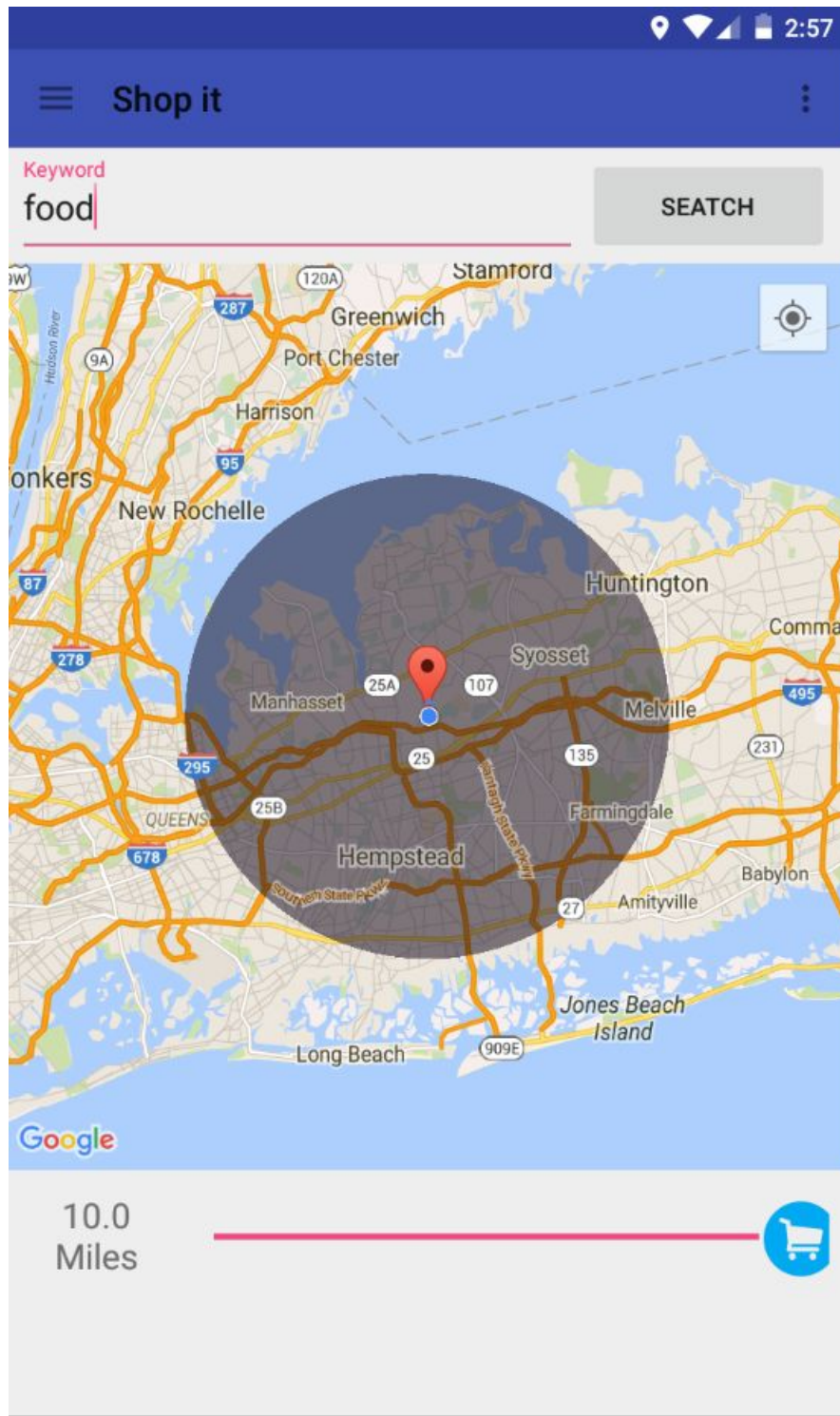
*Home screen presenting deals after login*



*List of features users can use*



The application provides users to search deals by location and keyword. This feature is really unique so the user can search for deals what he wants.



*Search by keyword and location.*





*Result of the above search*

**Travelzoo**  
Travelzoo Inc.  
FREE - In Google Play

VIEW

Search for destination

[Top 20®](#)
[Travel](#)
[Hotels](#)
[Restaurants](#)
[Activities](#)
[Entertainment](#)

[All Locations](#) > [Manhattan](#) > Haven Rooftop at the Sanctuary Hotel

## \$59 -- Haven: Dinner & Drinks for 2 at 'Rooftop Retreat'

Source: Haven Rooftop at the Sanctuary Hotel

132 W. 47th St., (between 6th & 7th Ave.), New York, NY 10036

\$59

\$95

38% off

150 bought

87%

Buy Now

m.travelzoo.com/ wants to know your location

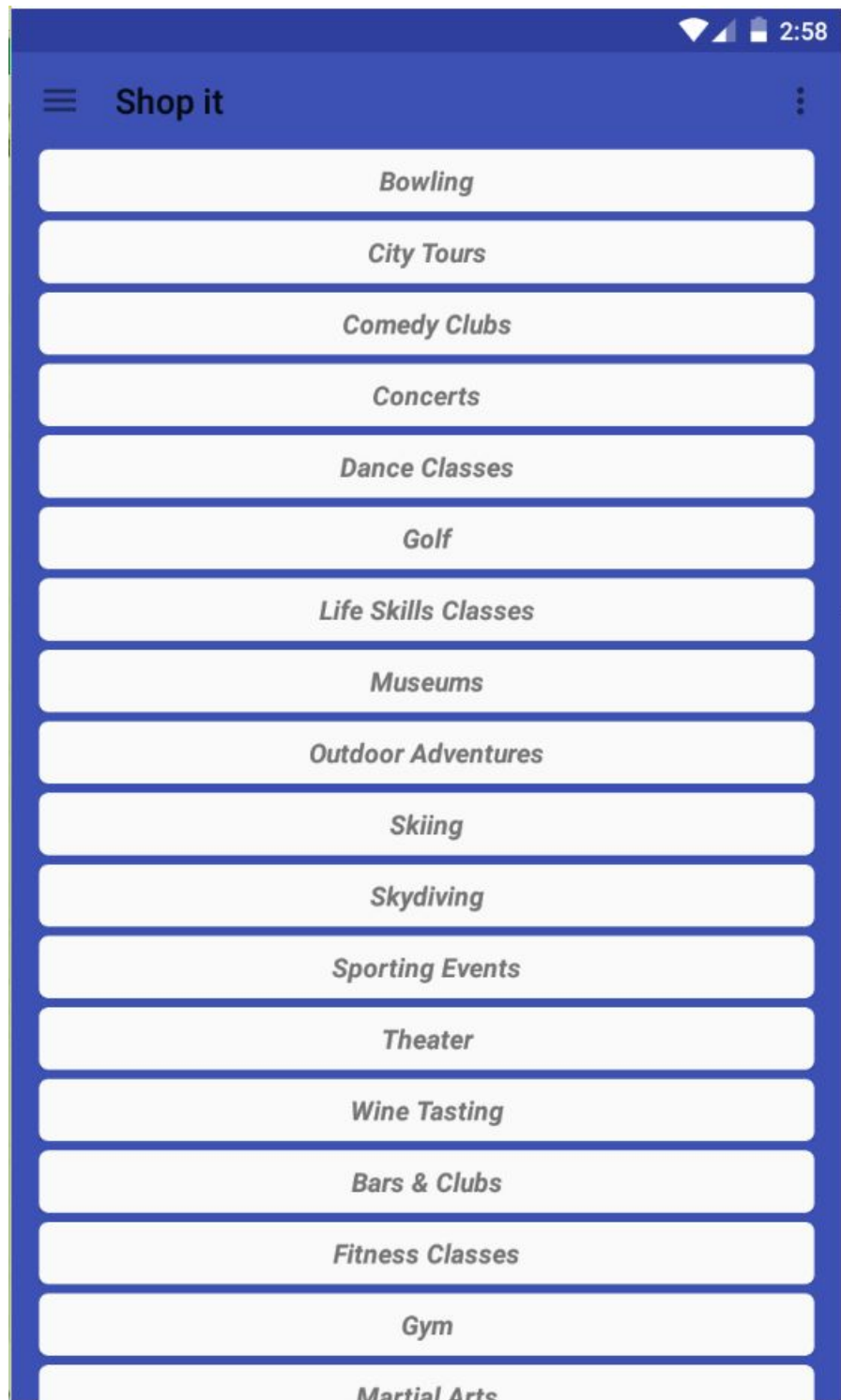
☒ Remember preference

Decline

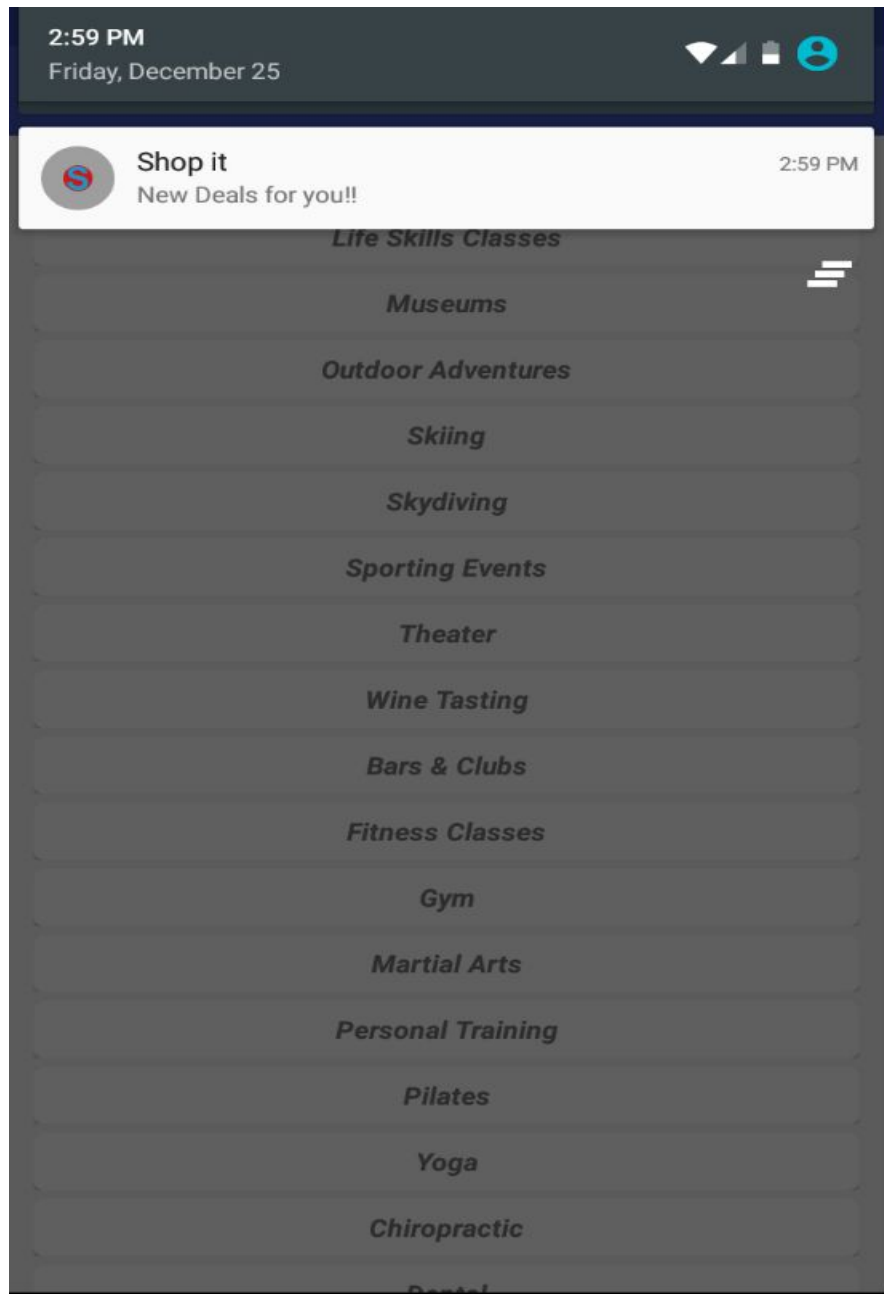
Share location

*On clicking deal*

User can also search the deals by his favorite category by pulling the category menu from side and selecting the desired category.

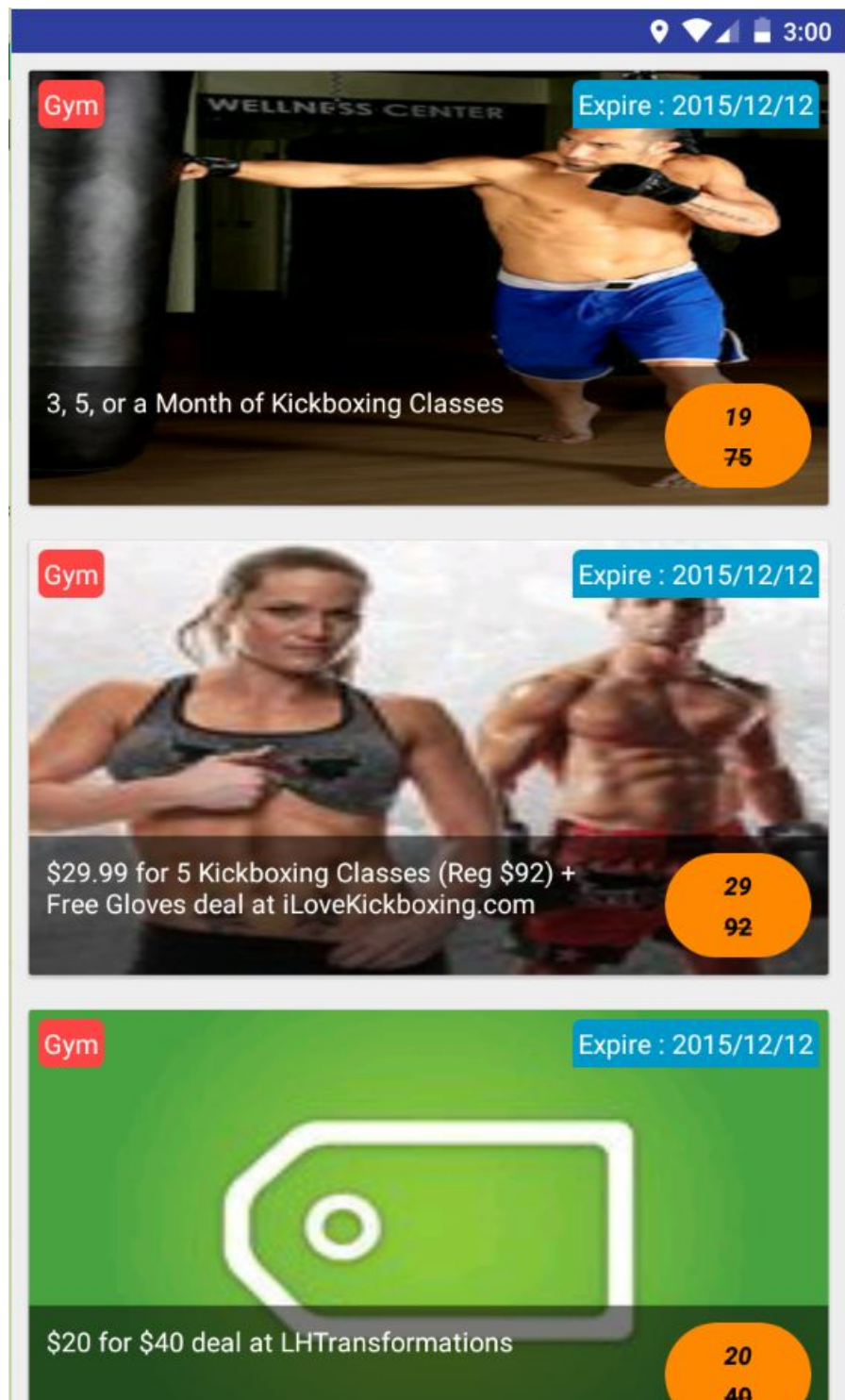


*Search by category*



*Notification for selected category of deals*

In addition to category application also provides unique feature to set see local deals on every 100 meters. So, user will never miss a deal.



For a quick demo of the application please watch the video hosted on YouTube: <https://youtu.be/B8xObADXUJY>

### **REST Web API (Developer Shailesh):**

To support all the android connected application and provide the rapid responses we have adopted the REST API model that provides the flexibility of easy to use client server interaction over HTTP together with the powerful query like functionality. Also using the REST model we ensured that the application can further be expanded to other clients as well other than android which again makes the entire project much more scalable and future ready.

### **ElasticSearch (Developer Ashish):**

Another main component of the project is the elasticsearch part which serves as the main storage and search engine for the android application. The Elasticsearch has been set up in a way that it matched the format of sqoot API so that there has be a minimum amount of reparsing of the data yet still maintaining the fast search feature required for the application.

### **GCM (Developer Abhishek):**

GCM helps to send data from server to a user's' devices, and receive messages from devices on the same connection. The GCM service handles all aspects of queueing of messages and delivery to client applications running on target devices. ShopIt! application required a near real time service for merchant side notifications. We have used GCM service to send information to client about deals in the nearby location from merchants.

### **Contribution:**

Shailesh Chaudhary :- Rest API Web Services

Nitin Wagadia:- Android application frontend client.

Ashish Tyagi :- ElasticSearch Backend Service

Abhishek Sharma :- Google Cloud Messaging (GCM) and Data Analysis KIBANA



## Extra Credit: Data Analytics with KIBANA.

