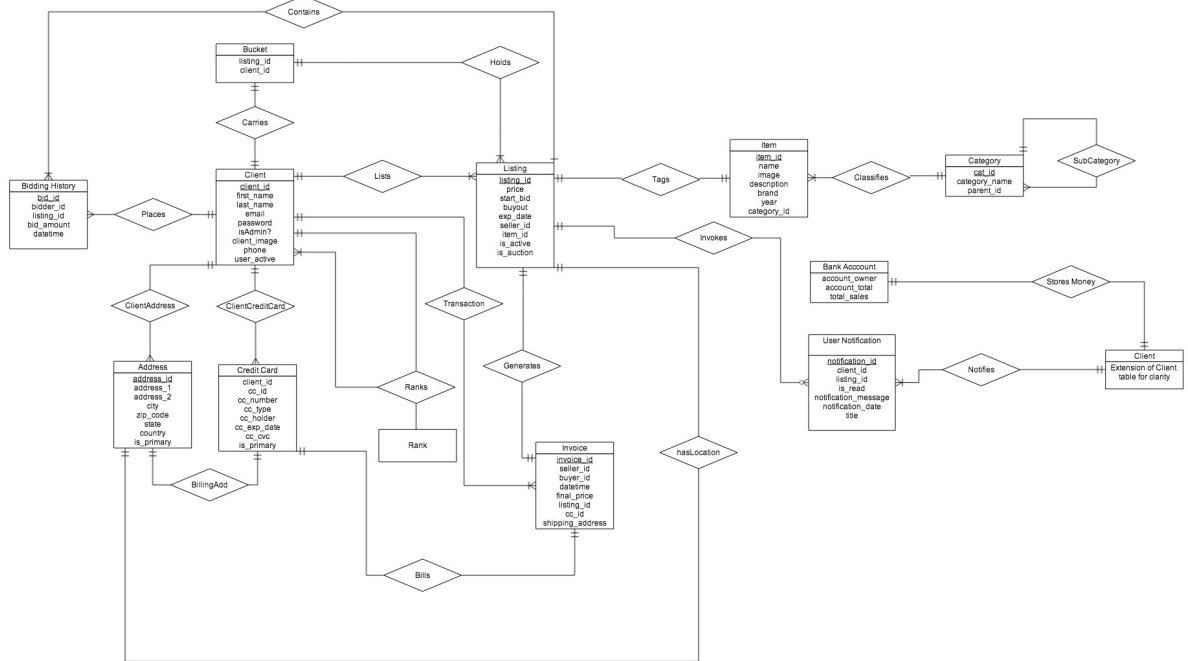


Recinto Universitario de Mayagüez  
Mayaguez, P.R.  
Departamento de Ingeniería de Computadoras

**Database Systems Design Project:  
LlamaBucket Mobile Auction Application**

César Cruz  
Jose Martínez  
Luis Medina  
ICOM5016  
Prof. Manuel Rodriguez  
7/10/2013



## Entities:

**Client (Strong)** – Registered user. Its attributes include general information that identify a registered user. The initial implementation of our entity includes a flag “*isAdmin?*” that classifies a user as an administrator or as a normal client.

- client\_id – The id of the client, auto increments.
- first\_name – First name of the registered user.
- last\_name – Last name of the registered user.
- email – The email the user used to register his/her account and is used as login credentials.
- password – The password the user uses to access his/her account. Necessary security measures will be taken into account.
- isAdmin? – Flag that classifies user as a Client ( flag=0 ) or Administrator (flag=1)
- phone – Phone number associated with the user.
- client\_image – The user's profile image

**Address (Strong)** – The billing and shipping address of the user. Users may have many addresses, but one address is at least linked to one user, and may be more (many family members having various accounts in one household). Credit cards are linked 1 to 1 with a billing address.

- address\_id – The id of the address, auto increments.
- address\_1 – First line of an address.
- address\_2 – Second line of an address.
- city – City of an address.
- zip\_code – Zip code of an address.
- state – State of the address. Application may be expanded to cover worldwide user base.

**CreditCard (Weak)** – The credit card of a user. Users may have many credit cards, but a credit card may only be associated with one user. This constraint can be changed as we further develop the application and study necessary security problems.

- client\_id – Id of the user linked to this credit card
- cc\_number – Credit card number.
- cc\_type – Credit card type (Visa, Mastercard, etc.).
- cc\_holder – Name of the owner as it appears in the card.
- cc\_exp\_date – Expiration date of the credit card.
- cc\_cvc – the card verification code of the card. Storage of this attribute is still uncertain because of security concerns that may arise.

**Bucket (Weak)** – The main selling point of LlamaBucket, the bucket contains items a user might be interested in; users add items that they want to watch, items they have bidden on, and items ready to be purchased. These types of categories can be filtered.

- listing\_id – The listing of an item that a user wishes to save.
- client\_id – The client associated with a bucket.

**Item (Strong)** – Representation of an item in our system. Our initial implementation contains only the essential attributes necessary to identify that item.

- item\_id – Id of the item, auto increments.
- name – Name of the item.
- description – General description of the item, includes condition, dimensions, etc.
- brand – The brand of the item
- year – Year item was produced.
- image – The url of the image, for now it is hosted remotely.
- category\_id – The category to which this item belongs to.

**Category (Strong)** – That which classifies an item. Both parent and child categories are contained in this table, with the most general categories having their parent set as *null*. A parent may have various children, but children may only have one parent.

- category\_id – The i.d of the category, auto increments.
- category\_name – The name of the category.
- parent\_id – the *category\_id* of the parent category.

**Bid (Weak)** – This table contains information about all the bids that have been placed. Other information may be inferred by making joins.

- bidder\_id – The *client\_id* of the user that has placed a bid.
- listing\_id – The id of the listing being bid on.
- bid\_amount – The amount of money offered in the bid.
- datetime – Information for calculating end times and whether or not a bid is on time, and not outbid.

**Listing (Strong)** – This is the entry of the item as a sellable product. This entity depends on item to exist and contains general information about the item, such as price and seller.

- listing\_id – The id of the listing, auto increments.
- price – The price of the item, bid or buy.
- start\_bid – The initial bid of the item.
- exp\_date – Date until the item is deactivated as a buyable product
- seller\_id – The *client\_id* of the seller
- buyout - The buyout price of the item
- is\_auction - Flags the item as an auction, buy now or auction with buyout
- is\_active - Flags the item if its currently active (meaning can users interact with it)
- item\_id - Connects the listing to the item it represents

**Invoice (Strong)** – This table contains information about a transaction, who has bought an item from whom, what amount was paid, etc.

- invoice\_id - The invoice id of the receipt
- seller\_id – The *client\_id* of the seller.
- buyer\_id – The *client\_id* of the buyer.

- datetime – Date and time of the transaction.
- final\_price – The price paid for the item.
- listing\_id – the id of the listing containing the item.

**Relationship Table:**

<b>Relationships</b>	<b>Relation</b>	<b>Description</b>
ClientAddress	1 mandatory to many	Ties a client with his addresses.
BillingAdd	1 mandatory to at least 1	Ties a credit card to an address.
ClientCreditCard	1 mandatory to many	Ties a client with his credit cards.
Carries	1 mandatory to 1 or more	Ties a client with a bucket
Lists	1 mandatory to 1 or more	Ties a client to items in his/her store
Holds	1 mandatory to 1 or more	Ties a bucket with the listing it is holding for the user
Tags	1 mandatory to 1 mandatory	Ties an item to its listing as a sale entry. (Price tag)
Generates	1 mandatory to 1 mandatory	Ties a listing to the invoice generated when bought
Transaction	1 mandatory to many	Ties a client with the transactions done
Ranks	1 mandatory to 1 or more	Ties a client with the ranking given by another client
Classifies	1 mandatory to 1 or more	Ties a listing with the category of the item
SubCategory	1 mandatory to many	Ties a category to its children
Invokes	1 mandatory to many	Ties a notification with the listing that took an action
Notifies	1 mandatory to many	Ties a notification with the client that receives it
Stores Money	1 mandatory to 1 mandatory	Ties a client with an "account" that keeps track of the client's available money

## E-R Mapping:

**Address** (address\_id: integer, address\_1 : varchar(100), address\_2: varchar(100), city :varchar(50), zip\_code :varchar(50), state : varchar(50), country : varchar(50), is\_primary: integer)

**Bank\_account** (account\_owner: integer, account\_total: float, total\_sales: integer)

**Bidding\_history** (bid\_id: integer, bidder\_id: integer, listing\_id: integer, bid\_amount: float, datetime : datetime)

**Bucket** (listing\_id: integer, client\_id: integer)

**Category** (cat\_id: integer, category\_name : varchar(60), parent\_id: integer)

**Client** (client\_id: integer, client\_firstname: varchar(255) , client\_lastname: varchar(255), email: varchar(60), password : varchar(40), isAdmin: integer, phone : varchar(40), client\_image : varchar(200), user\_active: integer)

**Credit\_card** (cc\_id: integer, client\_id: integer, cc\_number: varchar(255), cc\_type: varchar(255), cc\_holder: varchar(255), cc\_exp\_date: varchar(255), cc\_cvc : varchar(255), billing\_address : integer, is\_primary: integer )

**Invoice** (invoice\_id : integer, invoice\_date : datetime , final\_price : float, seller\_id : integer, buyer\_id : integer, listing\_id : integer, credit\_card : integer, shipping\_address : integer, invoice\_id : integer, date\_month : integer, date\_week : integer, date\_day : integer, date\_year : integer)

**Item** (item\_id : integer, item\_name: varchar(50), item\_image : varchar(100), item\_description : varchar(300), item\_brand : varchar(50), item\_year : varchar(4), item\_category: integer)

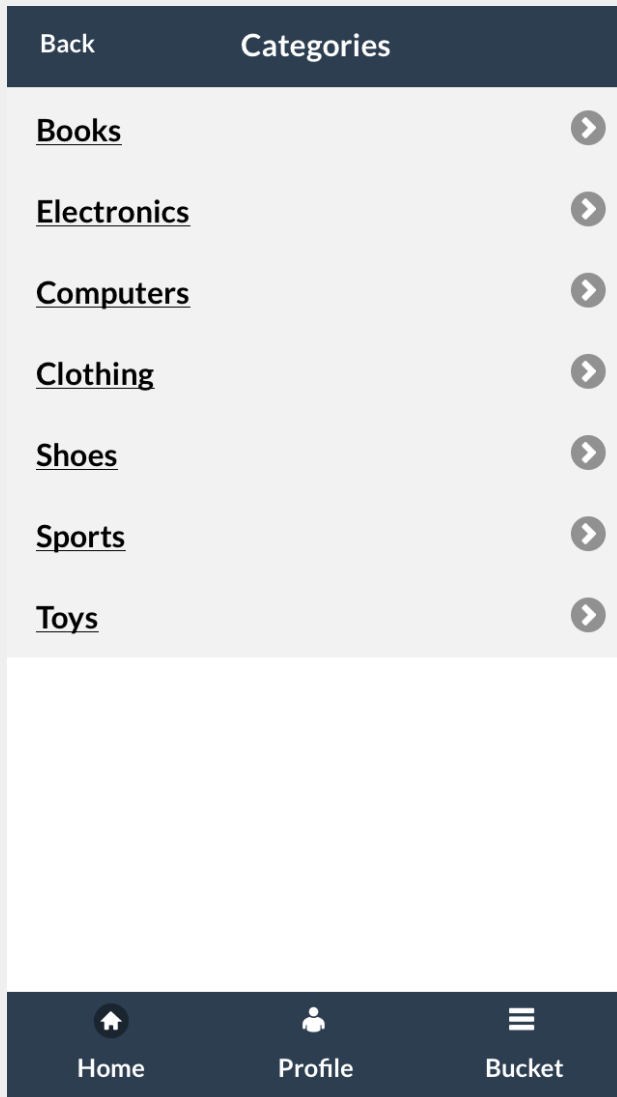
**Listing** (listing\_id: integer, price : float, start\_bid : float, exp\_date : datetime, seller\_id : integer, item\_id : integer, is\_active : integer, src\_address :integer, is\_auction : varchar(10), buyout\_price: : float )

**User\_notifications** (notification\_id : integer, client\_id : integer, listing\_id : integer, is\_read : integer, notification\_message: varchar(100), notification\_date : datetime, title :varchar(30))

**User\_ranking** (ranker\_id: integer, rankee\_id: integer, rank: integer)

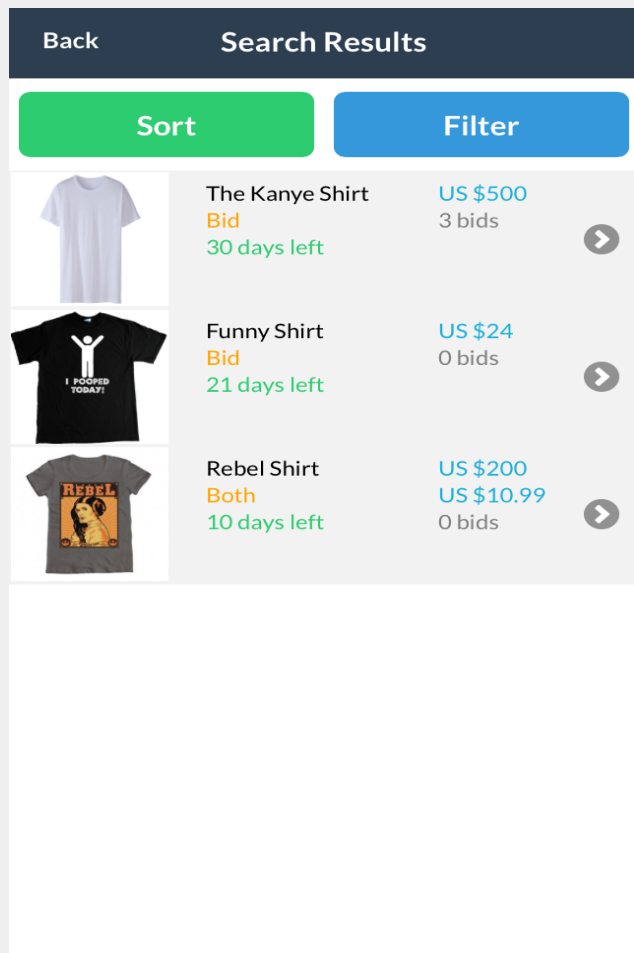


## Task Analysis



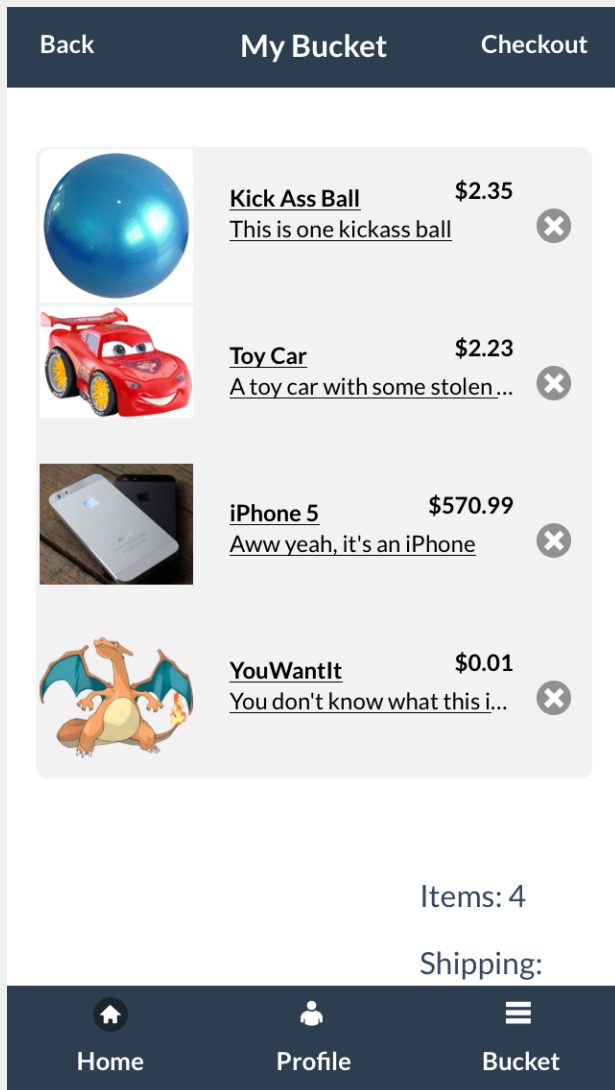
### Browse items by category

The user can search for items based on a set of categories and sub-categories. These are predefined by the administrator. The user does not need to be signed in to the app in order to browse by categories.



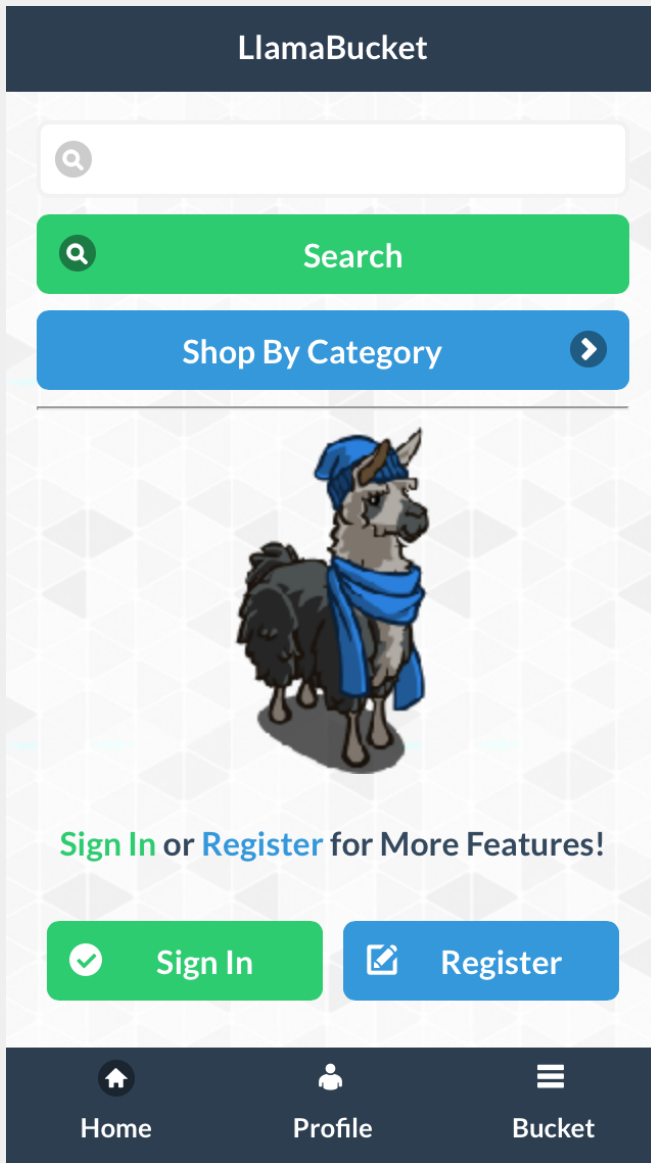
### Search for items by name

The user can search for items using an item's name. The search will match an item or items if the name matches a regular expression.



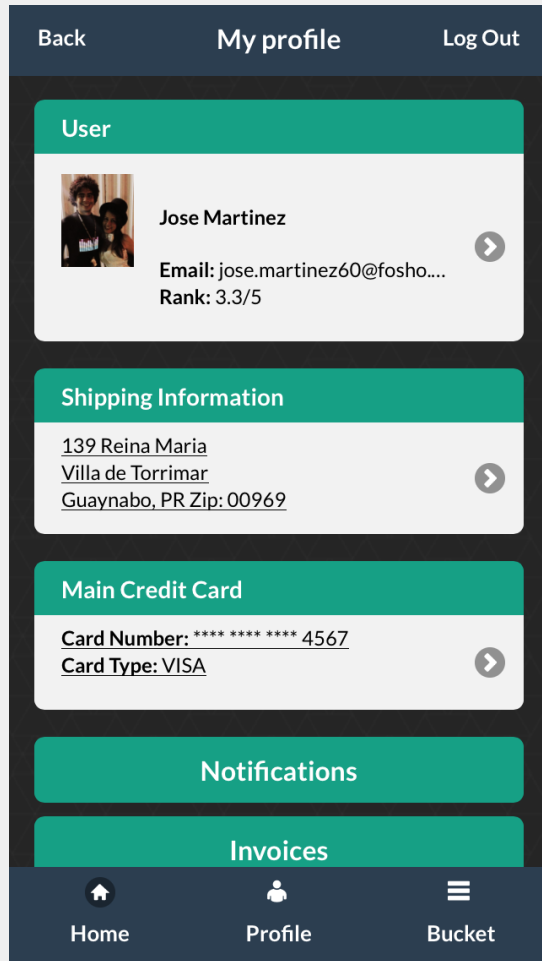
### Store items in a bucket

Items can be stored in the bucket, which is the equivalent of a cart. In the bucket, the user can see the total amount of items, the order total, and proceed to a checkout and place the order.



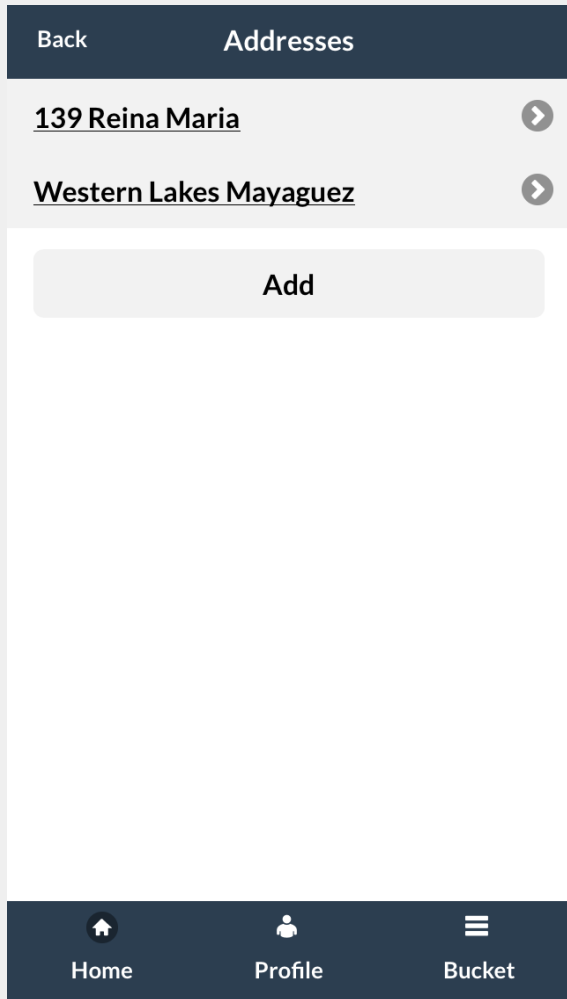
### Sign in or Register

A user can sign in or register in the application, signing in will grant the user access to the application in it's entirety.



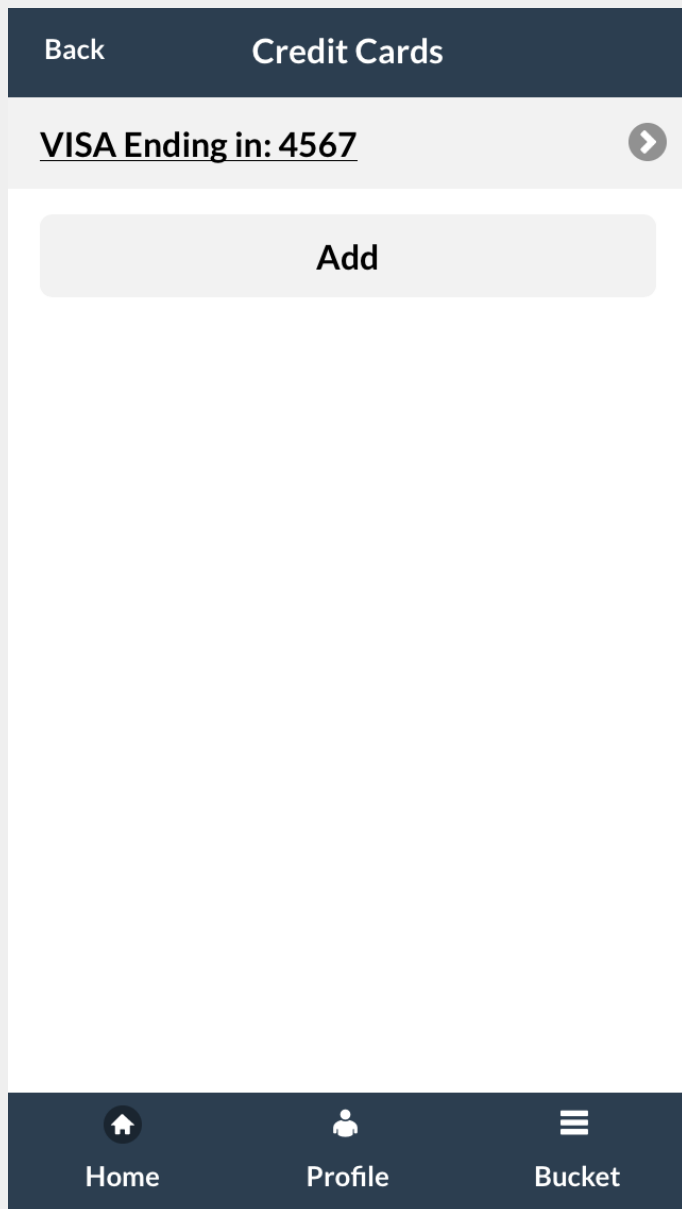
## View My Profile

View notifications, invoices of past orders, primary user address, primary user payment information, user name, email and rank. Also, a user can log out from this view.



### Address List:

User can see a list of all addresses that belong to him, delete addresses, add addresses or make an address primary.



### Payment Method List:

AI list containing all credit cards that belong to the user of the application. Can add, delete or select primary payment option.

Checkout

Place Order

Order

Items:

5

Shipping:

\$0.00

Order total:

\$576.88

Payment

VISA ending in:

4567

>

Shipping

139 Reina Maria

Villa de Torrimar

Guaynabo, PR

00969

>

Items

Home

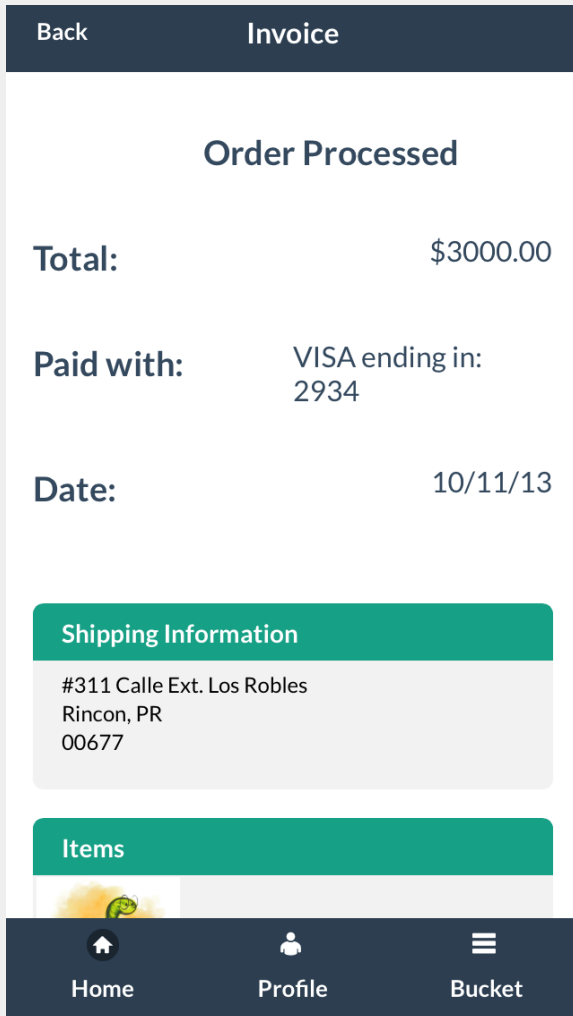
Profile

Bucket

Checkout Items

This view contains a summary of the order that is about to be processed. Contains information such as order amount, total number of items, where will the items be shipped to, which payment method are you going to use and a list of all the items and their seller.






### Process an order order

Users may see here invoices for the recently bought product, including the shipping information, the total price, and the seller.

## Administrative Tasks

Admin Page



Welcome Admin!

View Users

Generate Report - Today

Generate Report - This Week

Generate Report - This Month

By Product:

View Users

Generate Report - Today

Generate Report - This Week

Generate Report - This Month

By Product:

Generate Report - Today - By Pro...

Generate Report - This Week - B...

Generate Report - This Month - B...

View/Edit Categories

Logout

This section is only available to users that are flagged as administrators. The administrator is locked out from rest of the application, meaning they cannot sell, buy, or bid on items. Here, the administrator may see a list of users that are found in the database, and potentially edit their data. This page can also generate reports based on sales that have occurred on that day, week, or month. Administrators may also further their search by asking for reports by product only. This returns sales for their respective time period for listings that have names like the one submitted.

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## Today's Sales

### Sale 1

**Seller:** Jose Martinez

**Buyer:** Luis Medina

**Date:** 2013-11-11T04:00:48.000Z

**Item:** Suitcase

**Listing ID:** 281

**Final Price:** 99.99

**Address:** 139 Reina Maria

Villa de Torrimar

Guaynabo

PR

00969

US

**Payed with:** 1234923445674567

VISA

Jose Martinez

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## User List

### Jose Martinez - Client

Email: [jose.martinez60@fosho.edu](mailto:jose.martinez60@fosho.edu)



### Cesar Cruz - Client

Email: [cesar.cruz5@fosho.edu](mailto:cesar.cruz5@fosho.edu)



### Luis Medina - Client

Email: [luis@pokemon.edu](mailto:luis@pokemon.edu)



### Apu Banghlasdash - Client

Email: [apu.bang@itu.edu](mailto:apu.bang@itu.edu)



### TAJ Mahal - Client

Email: [taj.mah@india.edu](mailto:taj.mah@india.edu)



### Juan Medina - Client

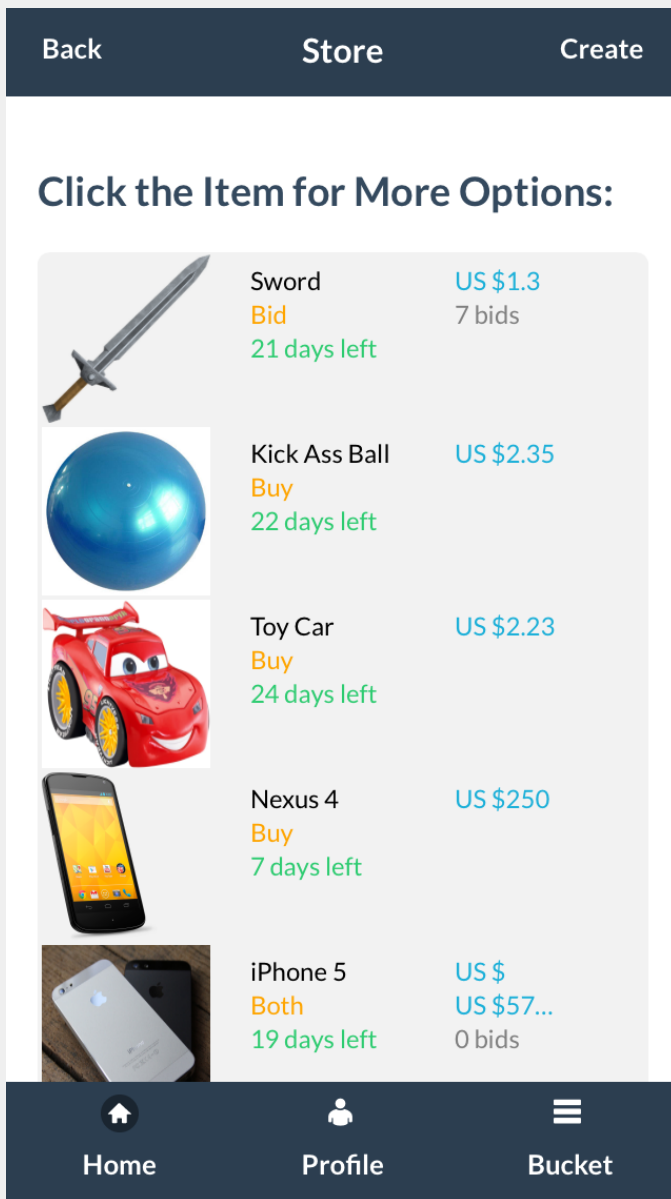
Email: [juanki@email.com](mailto:juanki@email.com)



### Fernando Salazar - Client

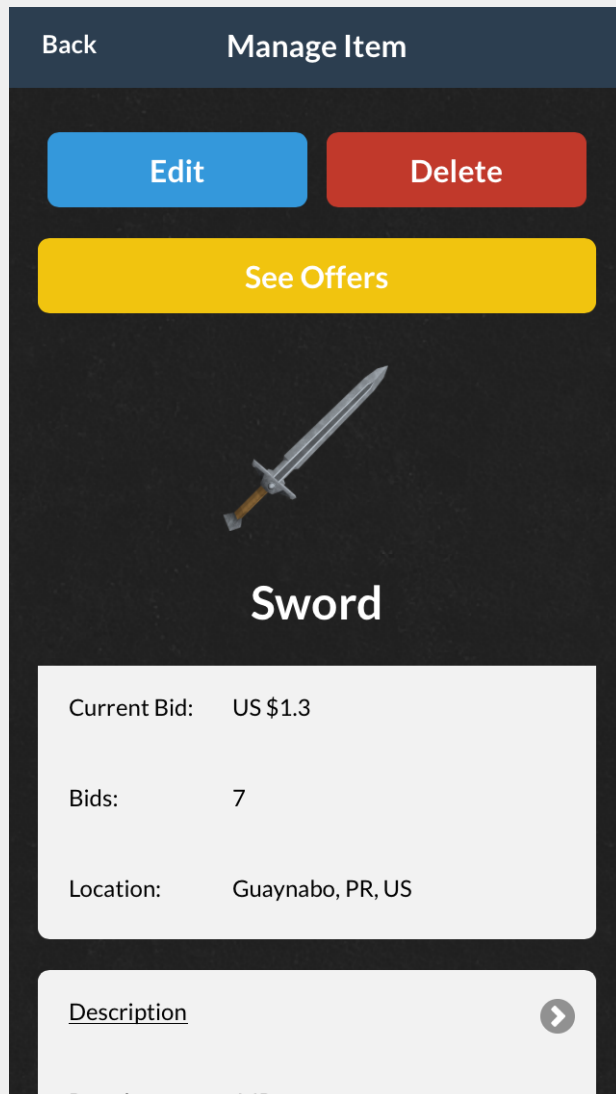
Email: [fernansal@email.com](mailto:fernansal@email.com)





### View Items I'm selling

Here, users may view the items they are selling. They may also create new listings for items they wish to sell.



### Manage Item

This view allows the user to manage the item, such as delete the listing or edit the information. They can also see the offers if the item is a bid. The rest of the page is how other users view the item page.

Edit an Item

Item Name:

Sword

Description:

An authentic samurai sword, from  
acient Japan

Category:

Books

Year:

2009

Brand:

AJB

Type:

☐ Buy

☒ Bid

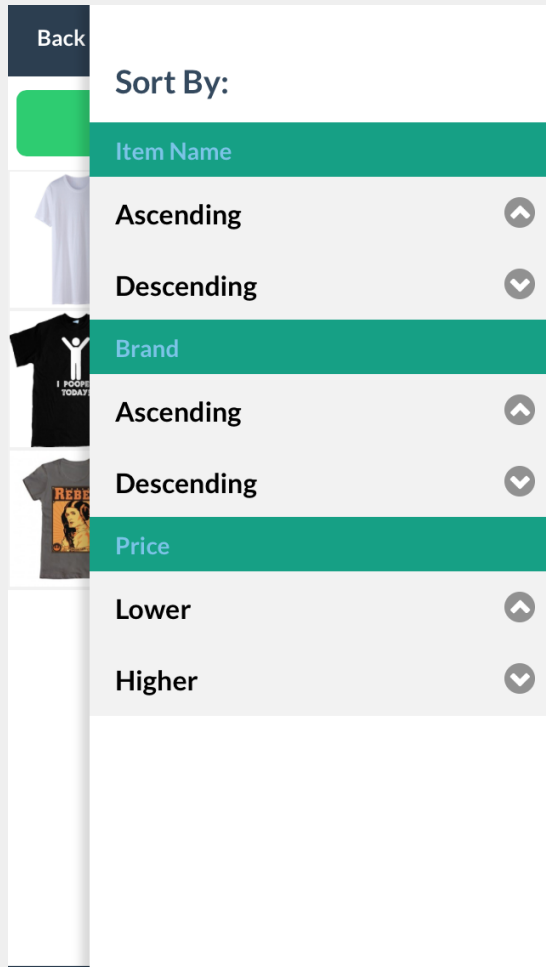
Starting Auction Price: US \$

Save

Cancel

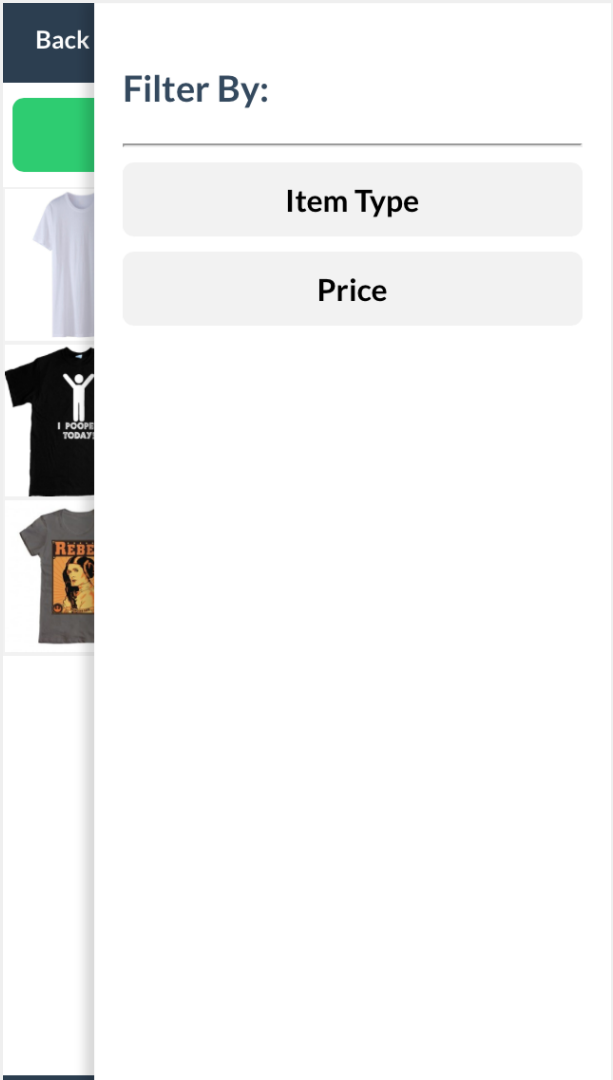
### Edit an Item

In this view, users may choose to edit their listings as they see fit. They can edit the name, description, category, year, brand, its listing type, and the cost of the item or starting bid. If users change their mind, they can simply cancel and return to the previous page.



### Sort Item Results

Here, users may sort the results of their search by ascending or descending item name, brand, and highest or lowest price.



**Filter Items**

Here users may refine their search by item type or price.



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## Item Offers

**Amount:** US \$ 10  
**Email:** luis@pokemon.edu  
**Name:** Luis Medina  
**Date:** Thu Dec 05 2013 03:23:34 GMT-0400 (A...

**Amount:** US \$ 2  
**Email:** cesar.cruz5@fosho.edu  
**Name:** Cesar Cruz  
**Date:** Thu Dec 05 2013 03:21:51 GMT-0400 (A...

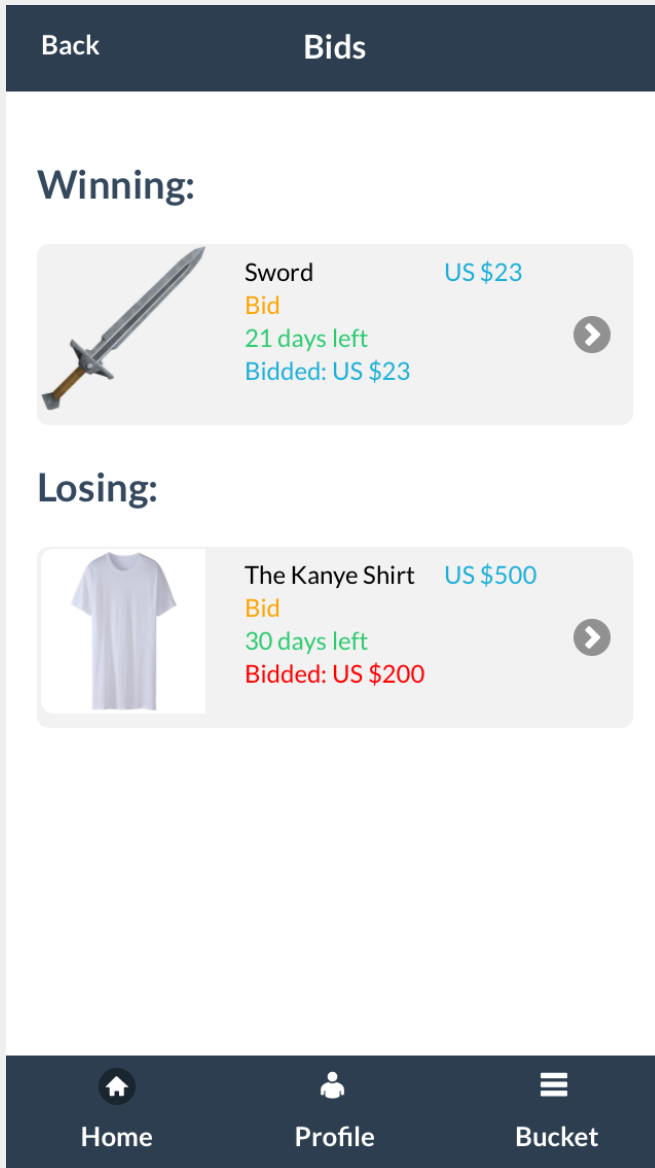
**Amount:** US \$ 23  
**Email:** jose.martinez60@fosho.edu  
**Name:** Jose Martinez  
**Date:** Thu Dec 05 2013 03:00:00 GMT-0400 (A...

**Amount:** US \$ 204  
**Email:** luis@pokemon.edu  
**Name:** Luis Medina  
**Date:** Wed Dec 04 2013 09:33:31 GMT-0400 (...)

**Amount:** US \$ 203.99  
**Email:** cesar.cruz5@fosho.edu  
**Name:** Cesar Cruz  
**Date:** Wed Dec 04 2013 08:13:25 GMT-0400 (...)

### [View Offers on Item](#)

Sellers can view the current offers on listings that contain an auction. This includes the name of the potential buyer, their contact information, the amount of money they are bidding and time and date of the bid.



### View Items the User is bidding on

Clients may view here items they are bidding on. On this quick view, we can see the item's name, price, and listing type. As expected, if one were to click on the item, the client is taken to the listing page.

List an Item

Item Name:

Description:

Category:

Books

Year:

Brand:

Type:

☒ Buy

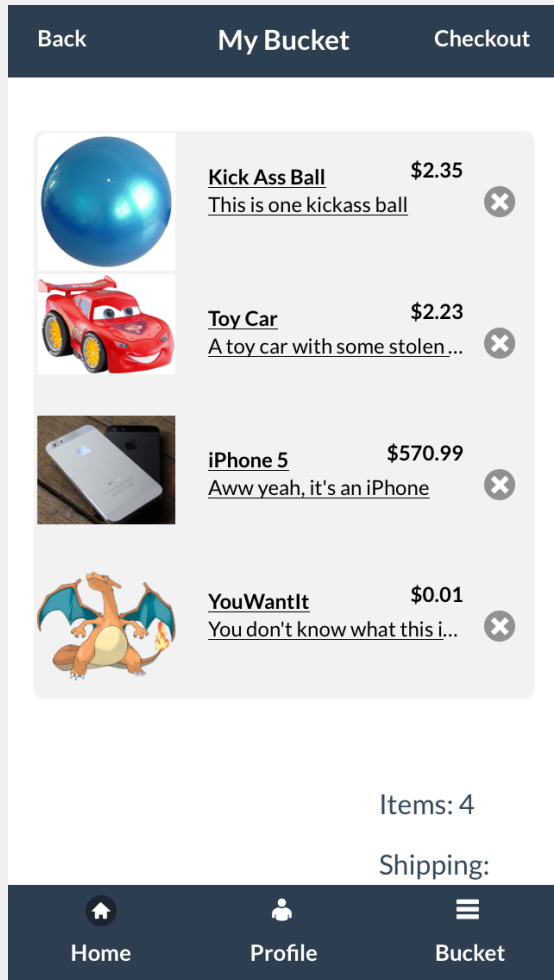
☐ Bid

Starting Auction Price: US \$

SaveCancel

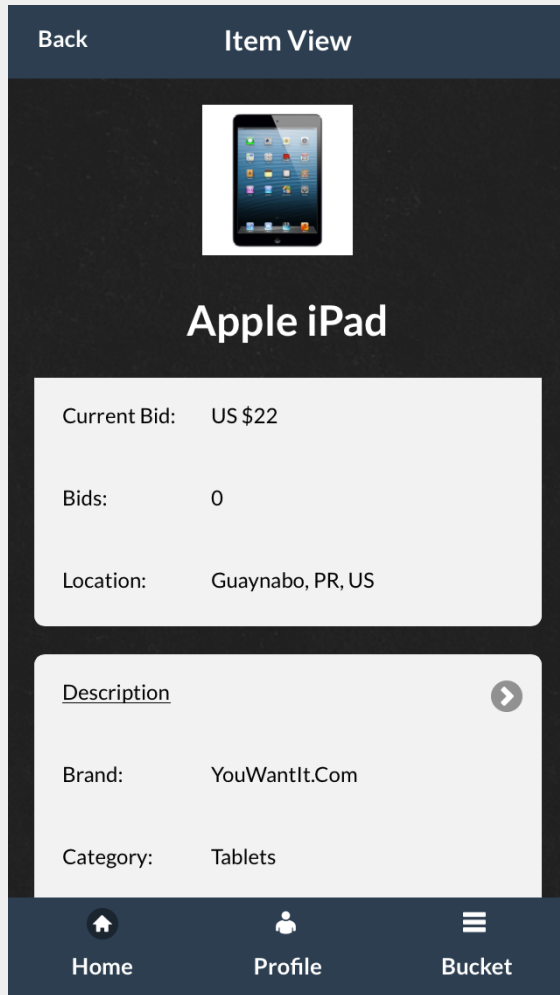
User List an Item for Auction or Buy

Here, potential sellers may input the information for the item that is being sold or put up for auction. This includes the name, description, category, brand, listing type, cost, and starting bid.



### View Items in my Bucket (equivalent to Shopping Cart)

Our take on the shopping cart, the Bucket holds all of the user's items, providing links to each listing and a checkout for all items. Users may also delete listings from their own Bucket.



### Item View

A central page to our application, the item view contains all the information a potential buyer needs to know about the item. This includes name, cost or current bid, description, its brand, category, and options for bidding or buying the item. Users may also add the listing to their own Bucket.

