Software Design Description

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Used Goods Recycle cum Inquiry Management System

by,

GROUP 30

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1. Introduction :

1.1 Purpose

This document gives a detailed description of the requirements for the "**Used Goods Recycle cum Inquiry Management System**" web app. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli. This document is intended to propose this software to consumer for their approval of the system .

1.2 Product objective

This web application intends to target college students and help them eliminating the role of third party in the buying and selling of their used goods.

And also to help those students who lost their belongings to find them.

1.3 Product Scope

When students pass out from college , most of the time they can't take all their belongings to home. As a result lots of wastage have generated. Sometimes they sell some things to some retailers , but it causes involvement of third person. Secondly , when someone loses something or someone finds something in campus , they put all their queries on NITC mail. Although it's important to the person who has found it and the person whose it is but it's useless to all the others. So sometimes it's hard to find important mails inside a inbox full of queries and all. So to prevent involvement of third person or wastage of goods to recycle the used belongings and to prevent unwanted inbox filler we are going to develop an application which deals with both of these problems. Here in this app in one side students can put their used product's advertisement and those who found someone's belongings put their advertisement to find the owner. On the other hand those who want to buy used product in relatively low cost and those who has lost something can come and search their needs.

1.4 Overview

- Provide a user-friendly interface to ease the process of buying, selling and finding lost items.
- Sellers can advertise their products for a certain period of time.

- If a user wants to buy a product he can contact the seller through the contact number provided in database.
- The person who founds an unknown item can place an advertisement to inform the owner.

2. Overall Description :

2.1 System Requirements

This application has mainly 4 parts:

- Customer – He/She is a user of the website who intends to buy product from a seller. A customer must have an account before he can make a purchase. All details of the customer is stored in a database.
- Seller – A seller is a user of the website who intends to sell items. Sellers must have an account before he/she can sell any item. All details of the customer is stored in a database. All products for sale under the seller is stored in another database.
- Founder - A founder is a user of the website who found an unknown item and intend to return it to it's owner.
- Owner - A person who lost any item can claim his/her belongings by contacting with founder directly through contact info provided in website.

2.2 Assumptions and Dependencies

- Users must be from the same college.
- Customers and sellers must have basic knowledge of computers and English language.
- All users must have an email and password for the account.
- Internet connection is mandatory.

3. User Requirements Definition:

The user requirement for this system is to make the system fast, flexible, less prone to error, reduce expenses and save the time.

- Less human error
- Strength and strain of manual labor can be reduced
- High security
- Data redundancy can be avoided to some extent
- Data consistency
- Easy to handle
- Easy data updating
- Easy record keeping
- Backup data can be easily generated

4. System Requirement Specification :

4.1 User Classes

This application has 4 classes:-

- Customer – He/She is a user of the website who intends to buy product from a seller. A customer must have an account before he can make a purchase. All details of the customer is stored in a database.
- Seller – A seller is a user of the website who intends to sell items. Sellers must have an account before he/she can sell any item. All details of the customer is stored in a database. All products for sale under the seller is stored in another database.
- Founder - A founder is a user of the website who found an unknown item and intend to return it to its owner.
- Owner - A person who lost any item can claim his/her belongings by contacting with founder directly through contact info provided in website.

4.2 External Interfaces

User Interfaces

- The application has been designed to minimize the need for text input from the user.
- Error messages are clear and concise making it easy for the user to understand**.**

Software Interface

- The application supports all major web browser that will make it convenient for the user to access our system.
- Development tool: PHP, HTML,CSS
- Database: MySQL

Hardware Interface

- Since the application runs over the internet, the system must always be connected to the internet via a modem, etc.
- Backup storage for retrieval of data in case of unexpected failures.

Communication Interface

- The HTTP protocol is used to facilitate communication over the internet.

4.3 System Features

Login

- A registered user can enter their email-id and password to start their session.
- A user who is not registered can create a new account by entering name, mobile, email-id and a password.
- The user has an additional option to change password.

Post Advertisement

- A seller or a lost item founder can post their advertisements under correct category weather they are seller or founder.
- The seller or lost item founder is also expected to post a brief description about the product, an image and expiry date for the advertisements.

Purchase or Find Products

- A buyer can view products either by searching for the item.
- Owner of the lost item can view advertisements of found products and choose their one's.

4.4 Non-functional system requirements

Performance Requirements

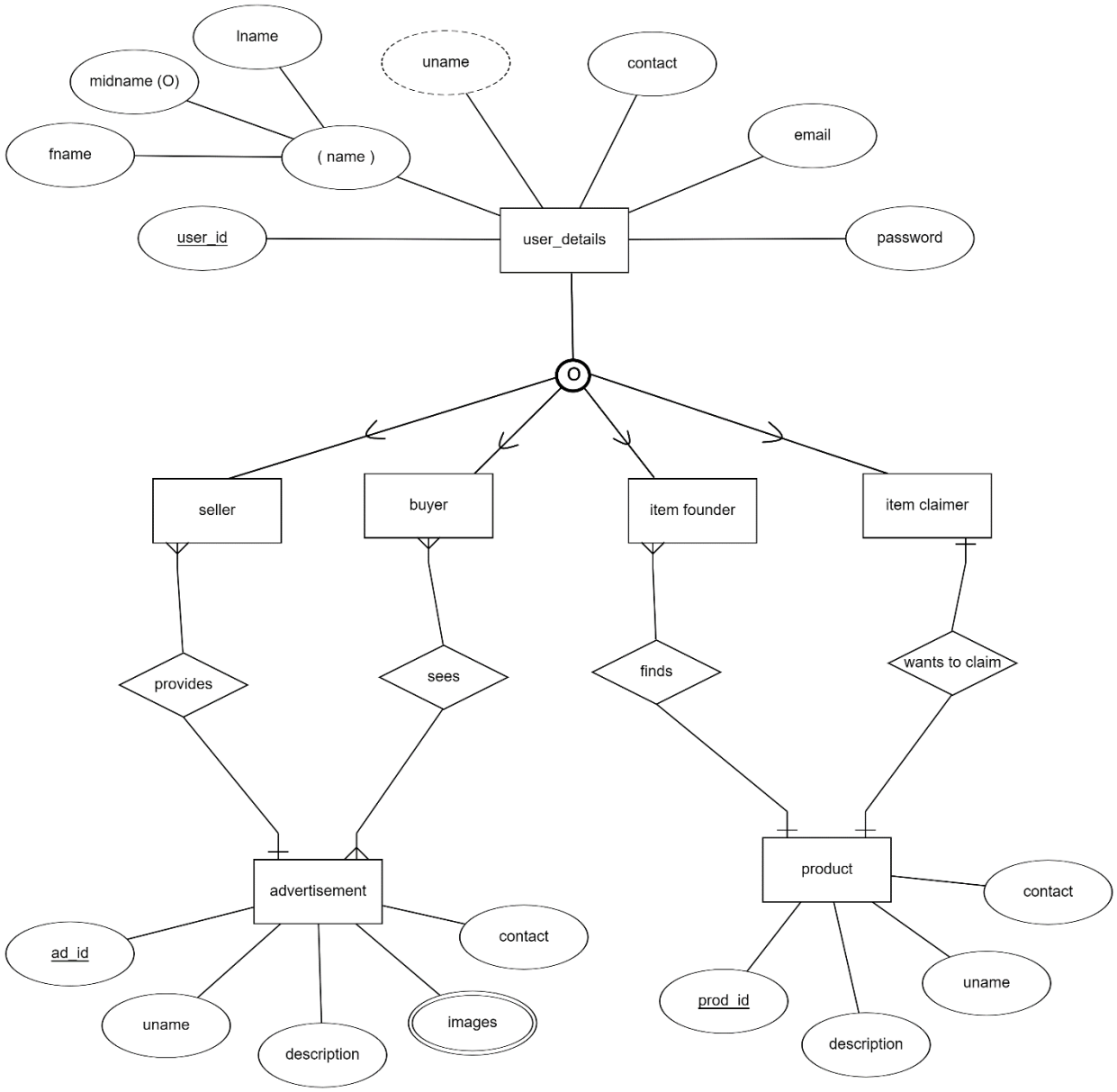
- The product shall be web based and has to be run from a up-to-date web server.
- The web app may take load time according to the speed of internet connection of the user.
- The load time also depend on type of hardware used at the time of running.

Safety and Security Requirements

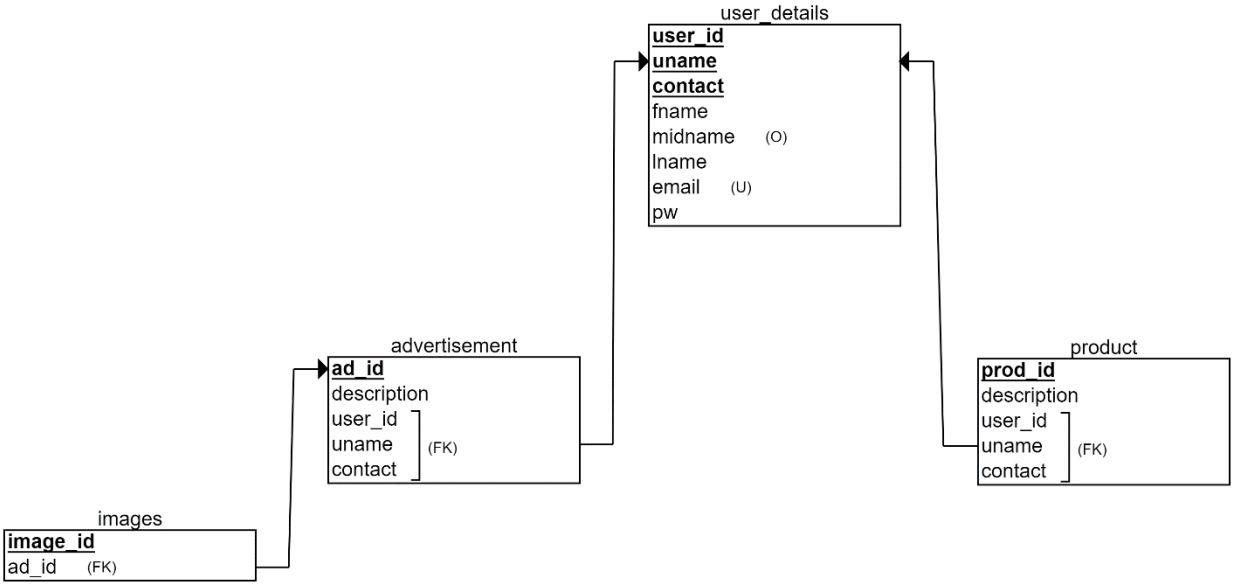
- The user must not have any access of other user's data and hence will not be able to manipulate their data. Their is no restrictions on users for read access. Both data and software should be backed up periodically.Users login ID(username) and password (may not be unique) should be unique.
- Sign out Function would also provided for user to log out successfully from the system.The web browser should not show the password while entering by the user.

5. Data Design :

5.1 Entity Relationship Diagram



5.2 Conceptual Schema



5.3 Normalization

The process of organizing the data in database to avoid data redundancy, insertion anomaly, update anomaly & deletion anomaly.

(a) First Normal form (1NF)

(b)Second Normal form (2NF)

(c) Third Normal form (3NF)

a) First Normal Form (1NF) :

As per the rule of first normal form, an attribute(column) of a table cannot hold multiple values I.e., it should store only atomic values.

b) Second Normal Form (2NF) :

A table is said to be in 2NF if both the following conditions hold:

● Table is in 1NF (First normal form)

● No non-prime attribute is dependent on the proper subset of any candidate key of table.

An attribute that is not part of any candidate key is known as non-prime attribute.

c) Third Normal Form (3NF) :

A table design is said to be in 3NF if both the following conditions hold:

● Table must be in 2NF

● Transitive functional dependency of non-prime attribute on any super key should be removed.

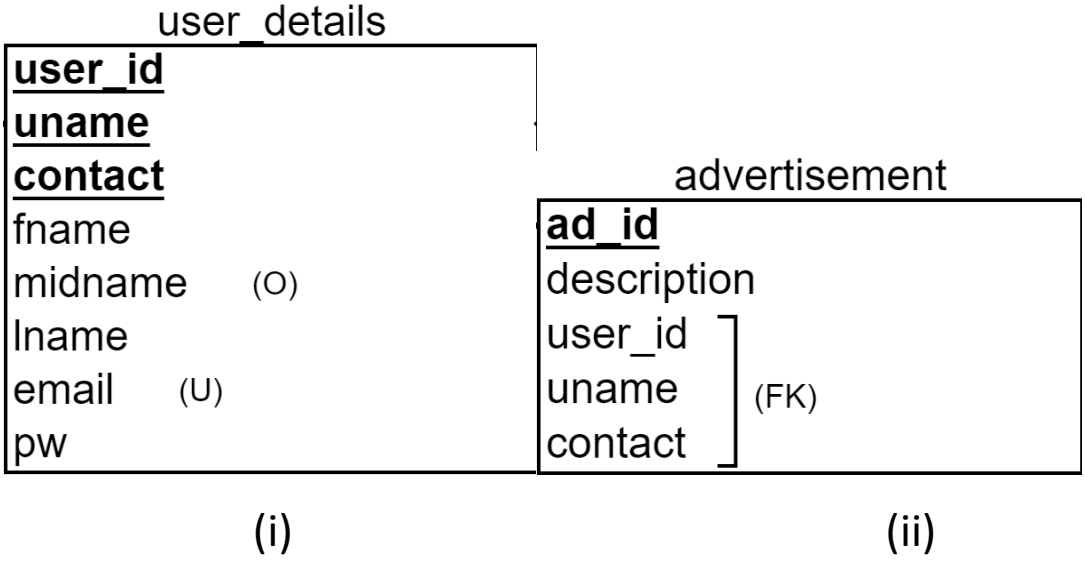
In other words 3NF can be explained like this: A table is in 3NF if it is in 2NF and for each functional dependency X-> Y at least one of the following conditions hold:

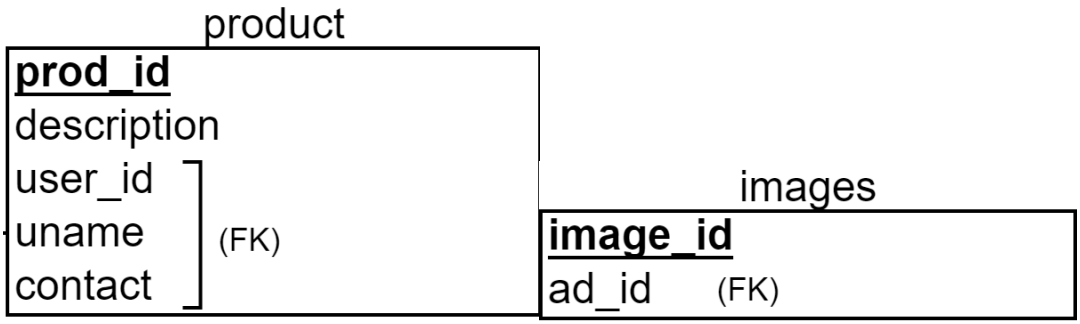
● X is a super key of table

● Y is a prime attribute of table

An attribute that is a part of one of the candidate keys is known as prime attribute.

5.4 Tables used in Our Relational Schema





(iii) (iv)

Normalization of Our tables :

A) 1NF:

All the tables in our model satisfy 1NF, since all the columns in our tables hold only atomic values.

B) 2NF:

a. It obeys 1NF.

b. From the above tables it's clear that we don't have any partial dependencies. I.e., No non-prime attribute is dependent on the proper subset of any candidate key of table.

So it satisfies 2NF as well.

C) 3NF:

a. It obeys 2NF.

b. From the above tables it's clear that we don't have any transitive dependencies.

So it satisfies 3NF as well.

6. Entities and Attributes :

This section of the document explains the entities used in the project, their attributes and how they will work together. Basically, this is intended to make the design more easy and understandable for everyone.

Entities:

1. User_details
2. Seller
3. Buyer
4. Item founder
5. Item claimer
6. Advertisement
7. Product
8. Images

6.1 User_details

This entity is basically store and fetch the user details. If a user is not registered then all user's details will be stored in our database. And if a user is registered then login credentials will be compared with the data stored in the database.

This is basic step to authenticate users to access this web application.

There are 4 categories of users and they are also represented by entities but they will share all common attributes of their superclass i.e. User_details. And doesn't have any separate attributes.

Subclasses are:

Seller, Buyer, Item founder, Item claimer

These subclasses have "overlap" property.

This entity doesn't participate in any relationship directly but its subclass entities does participate in relationships.

1. Seller provides Advertisement.
2. Buyer looks for/sees Advertisement.
3. Item founder reports the item.
4. Item claimer claims the reported item.

ATTRIBUTES

Attribute Name	Data Type	Attribute Type
user_id	Int	Primary key
contact	Numeric	Primary key
uname	varchar	Primary key
fname	varchar	Non-prime attribute
midname	varchar	Non-prime attribute
lname	varchar	Non-prime attribute
email	varchar	Non-prime attribute
pw	varchar	Non-prime attribute

6.2 Advertisement

This entity is used to represent the advertisements given by the “Seller” entity.

This entity takes part in following relationships.

1. Seller provides Advertisements.
2. Buyer looks for/sees Advertisement.

ATTRIBUTES

Attribute Name	Data Type	Attribute Type
ad_id	Int	Primary key
description	Varchar	Non-prime attribute
user_id	Int	Foreign key
contact	Numeric	Foreign key
uname	varchar	Foreign key

6.3 Product

This entity is used to represent the reported items by “Item founder”entity.This entity takes part in following relationships.

1. Item founder reports the item.
2. Item claimer claims the reported item.

ATTRIBUTES

Attribute Name	Data Type	Attribute Type
prod_id	Int	Primary key
description	Varchar	Non-prime attribute
user_id	Int	Foreign key
contact	Numeric	Foreign key
uname	Varchar	Foreign key

6.4 Images

This entity is used to represent the images uploaded by “seller” entity in advertisement.

This entity doesn’t participate in any relationship.

ATTRIBUTES

Attribute Name	Data Type	Attribute Type
images_id	Int	Primary key
ad_id	Int	Foreign key

7. References :

https://app.diagrams.net/

https://erdplus.com/

https://www.youtube.com/watch?v=g2yF2gyaN7I

https://www.youtube.com/watch?v=O16btnzfuYU

https://www.youtube.com/watch?v=R2Z-DgZ6QFQ