

College of Saint Benedict & Saint John's University  
Computer Science Department

GABeS

Phase 2

Team Potatoes

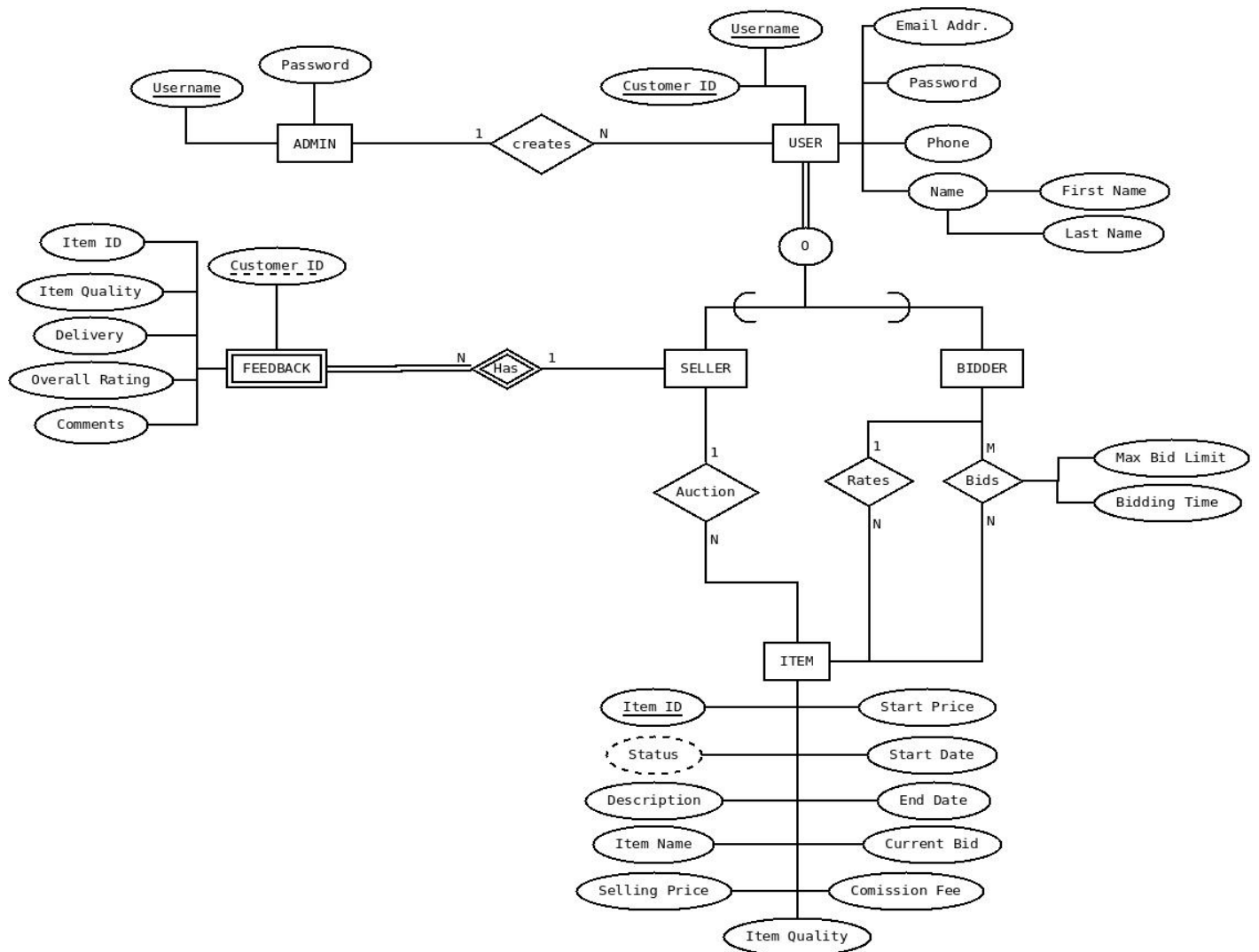
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## *Table of Contents*

Conceptual Database Design .....	4
EER Diagram .....	4
Explanation of EER Diagram .....	4
Entities .....	5
Attributes .....	5
Relationships .....	5
Super/Sub Classes .....	6
Constraints .....	6
Logical Database Design .....	7
Relational Map .....	7
Explanation of Relational Map .....	7
Issues Faced During Phase .....	8
Decomposition of Tasks .....	8
Meeting Minutes .....	9
September 29 <sup>th</sup> Minutes .....	9
October 6 <sup>th</sup> Minutes .....	10

## Conceptual Database Design - EER Diagram



### Explanation of EER Diagram

Above is our EER diagram to conceptually model the GABeS database system. Within the diagram are many entities, relationships, and attributes (all of which are detailed on the following page). When creating this conceptual model, there were many routes we could take to accomplish the desired task. Some of the choices we made after much discussion and some were easier. One that required some discussion was how to link *Feedback* into the system – whether it was best to go through the *Item* or *Seller* entity. We eventually settled upon linking through the seller due to how we modeled our sites in phase 1, and the logical thinking of rating a transaction for a specific seller made the most sense to us. Our original thinking was a slightly complex 3-way relationship between Feedback, Seller, and Item but upon reviewing with Imad we learned this would only introduce unnecessary redundancy. All of this info can be obtained by navigating various branches of the diagram.

## Entities

<u>Entity Name</u>	<u>Primary Key(s)</u>	<u>Number of Attributes</u>	<u>Entity Type</u>
ADMIN	Username	2	Strong
USER	Customer ID, Username	6	Strong
SELLER	Customer ID	0	Strong
BIDDER	Customer ID	0	Strong
ITEM	Item ID	11	Strong
FEEDBACK	Customer ID	6	Weak

## Attributes

<u>Parent Entity</u>	<u>Attribute Name</u>	<u>Attribute Type</u>	<u>Value Domain</u>	<u>Key Value</u>
Admin	Username	Simple	String	Yes
Admin	Password	Simple	String	No
User	Customer ID	Simple	Integer	Yes
User	Username	Simple	String	Yes
User	Email Address	Simple	String	No
User	Password	Simple	String	No
User	Phone	Simple	String of Integers	No
User	Name	Composite	First and Last Name Strings	No
Item	Item ID	Simple	Integer	Yes
Item	Status	Derived	Boolean	No
Item	Description	Simple	String(s)	No
Item	Item Name	Simple	String(s)	No
Item	Selling Price	Simple	Double	No
Item	Item Quality	Simple	Integer (1-10)	No
Item	Start Price	Simple	Double	No
Item	Start Date	Simple	String	No
Item	End Date	Simple	String	No
Item	Current Bid	Simple	Double	No
Item	Commission Fee	Simple	Double	No
Feedback	Customer ID	Simple	Integer	Yes (Weak)
Feedback	Item ID	Simple	Integer	No
Feedback	Item Quality	Simple	Integer (1-10)	No
Feedback	Delivery	Simple	String(s)	No
Feedback	Overall Rating	Simple	Integer (1-10)	No
Feedback	Comments	Simple	String(s)	No
Bids (relationship)	Max Bid Limit	Simple	Double	No
Bids (relationship)	Bidding Time	Simple	Double	No

## Relationships

<u>Relationship Name</u>	<u>Cardinality</u>	<u>Entities Involved</u>	<u>Attributes</u>
Creates	1...N	Admin/User	None
Has	N...1	Feedback/Seller	None
Auction	1...N	Seller/Item	None
Rates	1...N	Bidder/Item	None
Bids	M...N	Bidder/Item	Max Bid Limit & Bidding Time

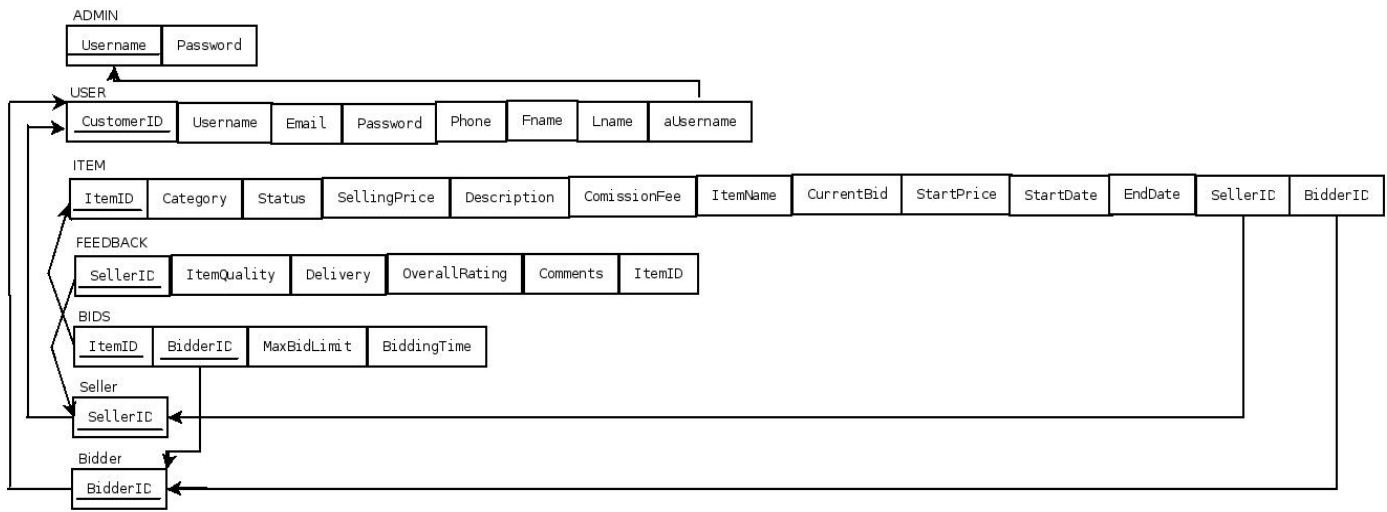
### Super/Sub Classes

In our EER modeling diagram, we had one instance of specialization resulting in super and subclasses – with *User* being a super class for *Seller* and *Bidder*. This specialization has overlapping participation because on the site a user can be both a seller and/or and bidder. With the creating of the specialization, the EER diagram gains clarity and makes clear the functionality, relationships, and connections that are unique to each way the user can interact on the site.

### Constraints

At this point we do not believe there are any constraints with our EER diagram. We believe it captures the full functionality of the GABeS site and does a good job of conveying how the database should conceptually be organized.

## Logical Database Design – Relational Mapping



### Explanation of Relational Map

Above is our relational map showing the connections that were originally represented by the EER diagram. This relational map takes advantage of both the foreign key and lookup table approach when modeling various types of relationships within the database. When deciding how to approach certain relationships we consulted examples from class, the book, and discussions with each other.

One example included the *Seller* and *Bidder* entities. Originally, we planned on having a lookup table for all of the relationships involved with these entities (*Bids*, *Rates*, and *Auction*). After further consideration we decided upon using the foreign key approach instead. By using this approach we prevented over complicating the map, creating unnecessary operations, and improving the quality of the model overall.

Should be noted: on the *BIDS* relation, the key is the combination of Item ID and Bidder ID. When creating our relational map we were unable to have both of these keys underlined with a single, connecting line.

## Issues Faced

Many of the issues faced in this phase were quick to be fixed by our team and resulted in a greater understanding at the end. One of the bigger issues faced was Tom got quite sick for about 8 days which interfered with completion of the EER diagram at the deadline we had originally set.

When designing our EER diagram we did face some difficulties deciding what should be entities and how to best model some certain relationships. One such example is the View Reports and Create Reports functionality for the Admin. Our original approach was creating new entities and tying them into other relationships/entities within the EER diagram. After discussing amongst ourselves, and some help from Imad, we learned that all of the information contained in these reports could be derived through connections to other entities.

As discussed in the EER diagram there were also a few other minor stumbling blocks but overall this phase went very well for our team.

## Task Decomposition

### Grant:

- Created EER diagram draft
  - Worked with team to combine ideas and make final EER diagram
- Created relational map draft
  - Worked with team to combine ideas and make final relational map
- Typed relational map in DIA

### Kyle:

- Created EER diagram draft
  - Worked with team to combine ideas and make final EER diagram
- Created relational map draft
  - Worked with team to combine ideas and make final relational map

### Tom:

- Discussed ideas relating to EER diagram design
  - Typed final EER diagram in DIA
- Created relational map draft
- Compiled meeting minutes for our longer work sessions
  - Brief discussions (5-10 minutes) had no meeting minutes
- Compiled information for Phase 2 report



## Meeting Minutes

### Team Potatoes Minutes

September 29, 2016

Meeting began at 3:45 pm.

#### **In Attendance:**

- Grant Boyer
- Kyle Olson
- Thomas Husen

#### **Grant and Kyle:**

- Continue researching possible ways to improve EER clarity/efficiency – Done.

#### **Tom:**

- Convert final hand drawn EER diagram into typed DIA version – Done

#### **All:**

- Using drafts of EER diagrams created, combine into final copy
- Discuss possible issues/concerns about design
- For next meeting – using final EER diagram design, create draft of relational map which will be compared with other team mates designs

Meeting adjourned at 4:30 pm.

Team Potatoes Minutes  
October 6, 2016

Meeting began at 10:45 am.

**In Attendance:**

- Grant Boyer
- Kyle Olson
- Thomas Husen

**Grant:**

- Convert hand drawn relational map into a DIA diagram – Done.

**Kyle:**

- Compile all other assorted info (notes, problems, decisions made, etc.) for use in the report – Done.

**Tom:**

- Compile all diagrams, resources, and notes into phase 2 report – Done.

**All:**

- Discussed any final changes to EER diagram we wanted to make
- Compared our relational maps, discussing any differences and agreeing upon what we believed to be the best possible map
- Talked about how the EER and relational map connected and how the functionalities would work
- Briefly talked about next steps we will take for phase 3

Meeting adjourned at 11:30 am.