# An Online Auction Website (KAIL)

**Kingsley Kwabenah Asong**

*Department Computer Science, Methodist University College, Accra, Ghana*

*Abstract*

*This project is based on the computerizations of the manual way of selling and buying items on campus and transforming it into innovative computerized online auction website and activities involved in buying and selling goods and services on campus. This system provides user a convenience way to buy and sell online without any problems. The product will be delivered by an auctioneer anywhere on campus. This project encapsulates all these activities into a single comprehensive database management system that effectively, accurately and in timely fashion delivers all of the above. The business-to-consumer aspect of electronic commerce (e-commerce) is most visible business use on the World Wide Web. The primary goal of e-commerce site is to sell goods and services online. This project deals with developing an e-commerce website for online auction website. It provides the user with different categories of items that can be bought. User can also upload images onto the site. In order to facilitate the online auction, bidding component is provided for users to bid for an item and the highest bidder wins the bid. The system is implemented using a 3-tier approach, with the backend database, a middle tier of Apache and PHP and a web browser as the front end client.*

***Keywords:*** *Online Auction, Website Development, KAIL*

## I.  BACKGROUND INFORMATION

Over the years, online auction websites have been gaining immense popularity. Online auctions present great opportunities to entrepreneurs and shoppers alike. They offer a common platform where buyers and sellers can bid or sell just about anything. Bidding on the auction websites is convenient and highly cost-effective. Most of the auction portals present automated bidding with a multitude of listing categories and subcategories. This will enable buyers and sellers to make transactions in real time. Auction portals are developed on an advanced software solution that makes the e-marketplace secure for bidders and sellers. Moreover, good online auction websites always focus on ease of navigation to maintain effective website usability.

As a seller, you can make sales quickly in the midst of strong competitors in the market. Sellers have complete control over their products that are on auction including display of products under specific categories and listings. You can also disclose important product details to ensure transparency and build trust among buyers. Moreover, online auction websites offer tools that assist sellers in listing products and managing their product catalog. These tools assist in adding product images, product descriptions, canceling bids and so on.

For the buyer, bidding on online auctions is fun and very easy. The website provides all the essential tools and resources to help members bid with assured security and confidence. To keep the auction transparent, auction websites also provide all necessary information about the product and seller.

Online Auction websites are one of humankind's oldest business pursuits, probably dating back to the earliest sales of food and animal hides. Auctions also represent one of the world's simplest business models: an item or service is offered for sale to the highest bidder. Despite the historical vintage and simplicity of auctions, only a small number of people actually take part in them. A traditional auction typically requires travel to a central site where you can sell goods or examine the items that will be put up for bid. Sellers have no guarantee that interested buyers will show up for the auction, and buyers have no guarantee that they will find something they want or need.

However, online auction Web sites make it easy for almost anyone on the planet who has a computer and Internet access to buy from, or sell to, almost anyone else who can log on to the same auction site. In the online auction world, corporations and sole-proprietor home businesses can compete for the same buyers. In the United States, special training, certifications, franchises, or storefronts are required such as Auction Technology Specialist (ATS) course offered by the National Auctioneers Association is a course certified by the NAA Educational Institute and does a good job instructing auctioneers on how to list items on auction sites such as eBay.com or Amazon.com.

Many people have launched part-time and full-time sales businesses simply by grabbing a few unneeded things from their households and selling them online. Later, they have branched out to items purchased at yard sales, garage sales, estate sales, and other auctions. Then they have learned how to buy certain merchandise at one online auction site and resell it at others. From there, they have opened online stores and built even bigger businesses that use online auctions to help them sell merchandise and buy more things to sell.

One of the biggest challenges for online auction participants is keeping an eye on auctions of interest all the time. After all, we all have full time jobs and lives which prevent us from watching auctions all day! Various "auction-sniping' software programs aim to help you do this more often. These software programs basically place bids for you based on guidelines that you set. In general you can set a price, up-to-which you're willing to pay, for an auction and the software will continue to bid for you while you're away from your computer (Gimein 2012).

In this study, we will discover how easy and fun it can be to bid and win at online auction sites, and how simple and profitable it can be to sell items online. We will learn how online auctions work and why you should always make a few small purchases first at any auction site before you sign up to be one of its sellers. We will also learn how to open buyer and seller accounts at KAIL auction website. This study will guide you through the process of creating your first listing and making your first sale. These experiences and the tips in this study will give you the insights you need to know about interesting online auction business.

Online auction sites can be fun places to buy useful items for your home, business, or hobby at bargain prices. Online auctions can be a pleasant, convenient, and profitable means of paring down the overabundance of stuff in your life. The volume in trade and sale is increasing as it has become a strong economic symbol in the world. Nowadays, Information Technology's role is necessary as a facility in making the aspect of online auction more significant.

In addition, many companies that use online auction systems to advertise auction items to the public manage to sell their product as quick and as many products as possible. The online auction is an offer aimed at the concept of searching for potential bidders based on predefined auction rules. An item is won based on the pre-defined auction rules. The online auction system has several properties which are called auction scheme. Actually, these properties exactly required in auction scheme are divided into two: basic and optional (Peng et al.2003). Basic properties include correctness, confidentiality and fairness. Optional properties include anonymity, privacy, public verifiability, robustness, price flexibility and rule flexibility.

E-bay.com is a web application which gives online auction and shopping services where people and businesses can buy and sell various goods worldwide. The auction is a process of buying and selling goods by offering them up for bidding, taking bids, and selling the items to the winning bidders. In this study we will also develop a dynamic web-based site for auctions. Online payment is very important in supporting

online auction. When a company or an organization establishes an online auction system, it must have collaboration with the financial institutions such as banks.

## II. LITERATURE REVIEW

This chapter mainly entails common gathering of information and required resources from all basis's involving to the internet about unlike online auction website. This study will center on recent internet auction searching and looks into the actions of eBay.com, the most popular online auction website in the world.

According to Fisher (2007) Literature Review is the condition or an impression and a significant estimate of a body of literature involving to a study topic or a study problem. This type of study gives student the broad perceptions on the topic area and how different methodology were accepted in the SDLC (Software Development Life Cycle),the approach to testing, the way venture actions were plan and many more. This research work also investigated into article, journals on the internet involving to the subject matter and expanded into application software developed for online auction website.

### A. Internet Auction

The Internet is determining industries and shifting business forms. It is disputed that companies that don't entrust fully to this new world today will be left behind and only companies that expand and realize fully new industry structures will make it (Karpinski 1999)  Unlike the real world, the variety in shopping on the Internet lies not in the divergence in variety but in the variety of means of purchasing. It's not a matter of what you desire to buy, but how you desire to buy it (GAW 1999). The mainly obvious and notice taking structures are the revival of agreed and auction pricing method on the internet. It is motivating to note that whereas in 1992 Business Week selected the "no-hassle, no-dicker sales method" as one of the best ideas on 1992, in 1998 Business Week published an article titled "Good-bye to fixed pricing? And in 1999 declared that "online haggling is the hottest thing happening in e-commerce"
PricewaterhouseCoopers in their 'E-Business Technology Forecast' estimates that as more possible members access the Web, the use of discussed pricing systems will develop and that the special-purpose technology accessible today to realize agreed and auction pricing will be included into enterprise and area Web sites (Cooper 2009)

Internet auctions are a new form of business that brings in changeability into almost all parts of a profitable exchange. For the unskilled, the method is baffling. Prices are random, consumers and suppliers are foreigner, and contrast is difficult since goods come packaged with services, and items on offer may be exceptional or out of date. "Auction" itself is an insufficient term for relating dealings powered by superior algorithmic forms. So far attention in the structure has been strong, whether suitable to the Wall Street buzz or the cult following by cyber-savvy e-shoppers.

### B. About Ebay.Com

In September of 1995 when Pierre Omidyar, the founder of eBay, auctioned off a broken laser pointer on his website he started a business uprising. Auctions have long been called by economists for their power to realize prices, but the main problem in their general use was the cost of gathering bidders. Internet auctions defeat this serious problem. Three years later, in 1998, the gross fourth quarter merchandise volume of eBay was $307million. In the fourth quarter of 2005, 10years after eBay was founded, total sales were $12billion. In 2008 eBay bragged that if it was a traditional retailer, it would be the sixth largest (measured by sales volume) in the United States; and in the third quarter of 2008 it had negative growth for the first time in its

history. EBay now operates in 29 countries, selling everything from Cold Mountain (the book, the DVD, and the mountain) to marbles.

Since eBay was the first Internet auction site, it has always benefitted from the network economies of a marketplace: Buyers want to go where the most sellers are; sellers want to go where the most buyers are. This simple logic made it unlikely that a second general auction website could be as successful, and indeed none have been. Both Yahoo! and Amazon launched competing websites in 1999.  In 2007 Yahoo officially closed their auction website in the United States and Amazon's auction website quietly stopped operating at around the same time. Yahoo still operates in Asia and other areas, but they have ceded the US to eBay. In the US the only successful competitors seem to be niche auctioneers or companies that offer auctions as a service. Thus, this study comes at an interesting time in the history of online auctions. With the closure of eBay's competitors and the first quarter of negative growth around a year removed, eBay appears to have entered what could be considered a "mature" phase for the online auction marketplace.

### C. The Ebay Market

One of the more striking features of the modern eBay platform is its remarkable diversityandthelargevolumeofgoodsforsale.WhileitisstillthecasethatmuchofeBay's volume is composed of used, low price, and collectible items, there still are millions of items listed every day that do not fit this category. The second largest category is clothing, and 63% of those listings are classified as new. EBay motors had over 60,000 cars and trucks listed. In 2004, Andrews and Benzing (2007) found 600 auctions for Honda Accords in a three week period. There were 1,045 listings in January of 2009. EBay claims100 million items on sale worldwide at any given time. In a cursory survey on the veracity of this claim, they found 78million on sale at eBay.com alone. EBay is no longer primarily an auction website. Overall only 12% of their listings in our quick survey were auctions, but this ads up to 9.4million auctions. A vast majority (69%) of the listings on eBay are store inventory, the stock of items from eBay stores.

Currently sellers have three different methods of selling their items: they can use an auction, fixed price (Buy it Now, BiN), or bargaining (Buy it Now or Best Offer, BiN oBO). It is unlikely that this list of options will decrease in the future, but it could increase. For example the auction format when the seller wants to sell multiple units (the "Dutch Auction") seems to no longer be used frequently, but it is still an option. In a few categories there are two types of bargaining available.

### D. Bidding

There are so many types of bidding on the eBay platform, but in this study we would look at one of them which is incremental bidding**.**

### a. Incremental Bidding

One of the uncelebrated puzzles of bidding behavior is that bidders frequently bid multiple times. Instead of simply entering a true maximum willingness to pay, bidders increase their bid by small incremental amounts over time. Wilcox (2000) shows that the average bidder submits 1.5 –2 bids, while Ockenfels and Roth (2006) report 38% of bidders bid at least twice. This may seem counter-intuitive. For example, Bajari and Hortaçsu (2003) show that in a common (or affiliated) values environment bidders should bid only once. Moreover, bid preparation does have a positive cost, and thus multiple bids are not costless. Indeed, Ockenfels and Roth (2006) refer to this behavior as "naive." Peters and Severinov (2006), however, show that it may be part of an equilibrium strategy. They analyze a simultaneous auction of many identical units of a private value good.

Each bidder is assumed to have a unitary demand, and price in each auction is determined by the traditional English auction mechanism. Peters and Severinov show that there is an equilibrium in which bidders always use an incremental strategy and switch auctions (cross-bid) if another auction has a strictly lower price. Intuitively they use the incremental strategy to coordinate behavior. If two high value bidders are in the same auction, then one of them will switch to another one. One implication of the Peters and Severinov model is that a large number of bids would be expected rather than only a few. However, bid preparation cost in their model is zero. Stryszowska (2005) provides an example of a two-auction game wherein no equilibrium exists when bidders do not bid early and in equilibrium everyone bids twice. It is likely that with more auctions some bidders would bid more often with high probability.

### b. The Amount And Cost Of Fraud On Ebay

Jin and Kato (2006) directly estimated the amount of fraud or misrepresentation of a good's value in the market for baseball cards. There are professional grading services for baseball cards, but some sellers do not use these services and instead simply offer their opinion on the quality of the baseball card. Jin and Kato bought the ungraded cards and then submitted them to a grader to estimate whether the claims of the owners were fraudulent. They found that sellers who claimed that their card was either "mint" or "gem mint" received a 27% higher price, but these sellers had relatively lower average ratings than did the sellers of ungraded cards. Since the prices that were paid for ungraded cards were substantially below the price for graded cards, it would appear that the seller's claims were discounted by the buyers, but perhaps not discounted enough.

The cost of fraud on eBay can also be assessed by comparing the prices on eBay to those received elsewhere. The problem with this comparison is that auctions on eBay probably face greater competition, and as Sailer (2006) shows, the exit value of a bidder on eBay should decrease the amount that he is willing to bid. A structural model could be developed that would estimate both the exit value and the number of bidders per auction. The two papers of which we are aware that have estimated such a model have only estimated only the impact of various factors on the price.

Dewan and Hsu (2004) compare prices from eBay to prices of identical items from an established stamp seller. They find that eBay prices were 10–15% less, with the differential increasing as the stamp became more expensive. However, eBay has approximately 100,000 stamp auctions going on at any one time, while the established stamp seller (Michael Rogers) runs auctions only twice a year. Furthermore, the Dewan and Hsu study analyzed stamps that were Michael Roger's specialty, stamps from East Asia. Their results, however, were supported by Diekmann et al. (2008), who analyzed tractor auctions on eBay and live auctions and found the predicted price on eBay was, for the median tractor, 31% lower than the predicted price in a live auction. However, if they restrict their estimates to items that cost less than $20,000 (and thus are covered by PayPal insurance), the eBay discount drops to 26%. Moreover, some tractors were sold for higher average prices on eBay.

### E. Conclusion

Internet auctions have been big news in recent years and much has been written about these compelling old/new exchange models, the eBay phenomenon, and the amazing Wall Street act. The popular press has intense on explaining the new movement and helping buyers avoid getting ripped off

Business news, much of which is produced by the companies themselves, has kept its eye on the steeply rising trend lines. Technology writing has taken for granted the goal of the "frictionless market". There is a

dearth of material about the potential impact of this kind of commerce on the economy as a whole, on society and even on the individual and even students. Some of these questions apply to all Internet commerce. But the Internet exchange is even more interactive and uses even more sophisticated data tracking and integration technology. On one hand it allows sellers to know buyers' needs and wants, purchasing behavior, buying power, habits. On the other hand it dramatically increases consumers' access to information. Surely the impact of this data explosion deserves more attention.

More study is also required of what happens to businesses when they cannot be certain of the price will they fetch for what they sell and the price they will pay for what they buy. How does this affect accounting, planning, earning expectations and many more profession. Relatively little attention has been paid to the legal questions that arise from increased use of electronic commerce in general, and exchanges in particular. Questions of jurisdiction, liability, accountability, and taxation abound, though perhaps the territory will only be explore in MUCG more real cases are litigated.

## III. FACT FINDING METHODS (DATA COLLECTION TOOLS)

As indicated by Weller (2008), data collection basically involves careful selection of sample unit so as to make observation with primary goals of avoiding bias. The following fact finding techniques were considered for collecting the data.

### A. Interview

Team members (Analyst) used interview to information about the current usage of online auction website from potentials user. Here the team member discovered the misunderstanding, unrealistic exception and description of activities and problem along with resistance to the new system. Interviews are time consuming, so we engaged 50 respondents.

### B. Questionnaire

The analyst can collect data from large groups with use of questionnaires. Questionnaires could be open-ended or closed-ended. Open-ended questionnaire are used to learn feeling, opinion, general expression on process details or problem. In it questions are answered in their own words. In closed questionnaires a set of prescribe answers are used and specific response have to be selected. This is a costly affair as the question should be printed out.

### C. Observation

This is a skull which the analyst has to develop. The analyst has to identify the right information and choose the right person and look at the right place to achieve his objectives. He should a clear vision of how seller does their operations and also how bidders wins their bids, this he should be a good observer. However, our research restricts us to interview, questionnaire, observation and visit to certain websites.

### D. Source Of Data

The main source of primary data used was students of Methodist university college Ghana. Questionnaires and interviews were used in collecting these primary data. The structure of the questionnaire was divided onto two parts A and B. Part A collected data on the internet usage of respondent and part B solicited information on how they want an online auction website to be made. In designing the questionnaire, the open-ended response set and the fixed alternative question was adopted.

The ordinal Scale method was used for specific answers from respondents in order to enable us make objective analysis and interpretation. This is because the ordinal is used when variables values represent categories with some intrinsic ranking. For Example level of service satisfaction from highly dissatisfied to highly satisfy. The open-ended response set was also used to make respondent answer the questionnaire in their own words and give more presentation on their response. The fixed alternatives question was adopted to give respondent specific limited alternatives response to choose from.

### E. Pre-Testing

Prior to the questionnaire which will be administered, a pre-test survey will be conducted using 10 students comprising of 5 bachelor of business administration and 5 information technology students. The purpose of the pre-testing will be to identify and correct some of the potential problems that were likely to occur in the main questionnaire administering. The pre-testing brings out respondent understanding and general reaction to the questionnaire. It also helps the researcher to access whether the method of collection adopted is appropriate for the study.

### F. Sampling Size And Sampling Techniques

Questionnaires were randomly distributed as indicated by Cochran (2011) a simple random sample of a given size, all such subset of the frame are given an equal probability. Each element of the frame thus has equal probability of selection: the frame is not subdivided or partition. Furthermore, any given pair of element has the same chance of selection as any other such pairs (and similarity for triple and so on). This minimizes bias and simplifies analysis of results. In particular the variance between individuals result within the sample is good indicator of variance in the overall population, which makes it relatively easy to estimate the accuracy of the results. According to Barlert (2008) the sample size of a statistical sample is the number of observation that constitutes the sample. It typically denoted by n, a positive integer. The sample size is an important feature of an empirical study in which the goal is to make inference about a population based on a sample. In this study we shall considered a sample size of 50 of which questionnaire would be administered to them and will retrieved for our data analysis.

### G. Tools

In the development of the online auction website (KAIL), the tools we are using are dream weaver with cascading style sheet, JavaScript to develop the interface. MySQL will be used to develop the database. Personal Home Page (PHP) will also be used to create the linkage between the interface and the database. The online auction website will be dynamic which will enable students to make changes to the site without the developer effort.

### H. System Methodology

This is a development of a solid online web based architecture that will provide a logical, consistent plan of activities and comprehensive coordination that will lead your business application and infrastructure from their current state to the final goal. This also portrays the research design and the method used for data collection and analysis. The main research tool adopted under this study was interview, questionnaires and observation. Project plan are required to assist with the effective management of project to ensure that components of the project are completed in the right order. The plan should set out what is to be done in series of interrelated steps, the deadlines and critical path for the achievement of the component part, resources for the project and the project management process plan should be formulated in consultation with group members.

**Project Plan:** A project plan typically identifies the specific outcome of the project completion of which represent major project milestone. At the beginning of every project, it is imperative to identify the key

element of the project start up (Lewis 2003). Firstly you deal with what is to be carried out, the business case that is to be carry and so on. The following generic software process model have been identified which we intend to use.

**Rapid Application Development (RAD):** Rapid Application development refers to a type of software methodology that uses minimal planning in favor of rapid prototyping. The "planning" of the software developed using (RAD) is interrelated with writing the software itself. The lack of extensive pre-planning generally allows software to be written much faster and makes it easier to change requirements. This is a prototype that provides a first-hand feel of exactly how the site will operate. Here user will be heavily involved in the development. This is in the pages that is designed to stimulate the actual functionality of the software product but does not do processing.

**Waterfall Model:** This is a technology which is stable, well-structured and involves a lot of documentation for easy maintenance. A disadvantage of this model is that user's involvement is minimal and it is at sign off stage that a mandate can be given to carry on. As a matter of fact, waterfall model development process has distinct goals for each phase of development, where each phase is completed and signed off before the commencement of other phases and there is no tuning or revisiting a previous phase. A special characteristic advantage of waterfall model is that, it allows for departmentalization and managerial control. A schedule is typically set with deadlines for each phase of development and a product can proceed through the development process theory and this process leads to the project being delivered on time, because each phase has been planned in details. We will use the waterfall model for this project because of the relevance to the project as well as the above mentioned advantages. Below is the waterfall model for system development.
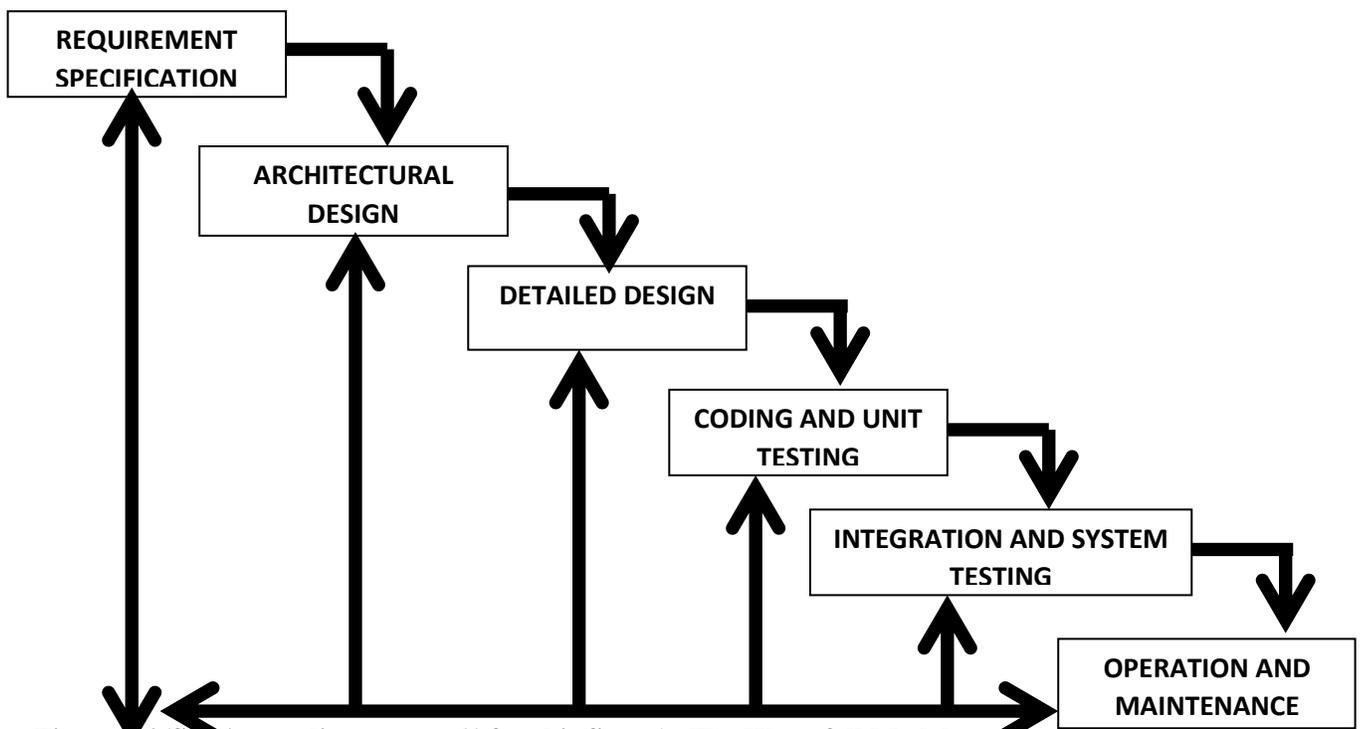


**Figure 3.0(See Appendix on page 61 for this figure): The Waterfall Model**

**Work Break Down Structure (WBS):** A work breakdown structure is how the whole project was broken down into smaller chunks was developed. This was to help in identifying project milestone and finds the appropriate methods of achieving them. This is shown below

| Number of Weeks / Activities | 1-2 | 2-4 | 4-6 | 6-8 | 8-10 |
|---|---|---|---|---|---|
| Requirement Definition | ■ | | | | |
| Design | ■ | ■ | | | |
| Development | | | ■ | | |
| Integration and testing | | | | ■ | |
| Installation and acceptance | | | | ■ | ■ |

**Figure 3.1(See Appendix on page 61 for this figure): Work Break down Structure**

**Task Analysis**

| TASK # | TASK DESCRIPTION | START DATE | FINISHED DATE |
|---|---|---|---|
| 1 | Requirement Analysis | 25/03/2013 | 08/04/2013 |
| 2 | Design | 08/04/2013 | 22/04/2013 |
| 3 | Implementation | 22/04/2013 | 06/05/2013 |
| 4 | Testing | 06/05/2013 | 20/05/2013 |
| 5 | Project Report | 20/05/2013 | 31/05/2013 |

**Table 3.0: Task Analysis – Task Description (See Appendix on page 61 )**

| TASK #1 | REQUIREMENT ANALYSIS | START DATE | FINISHED DATE |
|---|---|---|---|
| 1.1 | Introduction | 25/03/2013 | 28/03/2013 |
| 1.2 | Investigation and fact finding | 28/03/2013 | 31/03/2013 |
| 1.3 | Interview | 31/03/2013 | 3/04/2013 |
| 1.4 | Questionnaire | 3/04/2013 | 06/04/2013 |
| 1.5 | Sampling Document | 06/042013 | 10/04/2013 |

**Table 3.1: Task Analysis – Requirement Analysis**

| TASK # 2 | DESIGN | START DATE | FINISHED DATE |
|---|---|---|---|
| 2.1 | Draft Design of Existing System | 7/04/2013 | 12/04/2013 |
| 2.2 | Draft of Proposed System | 12/04/2013 | 17/04/2013 |
| 2.3 | UML Model of Proposed System | 17/04/2013 | 22/04/2013 |
| 2.4 | Complete Design | 22/04/2013 | 30/04/2013 |

**Table 3.2: Task Analysis – Design**

| TASK # 3 | IMPLEMENTATION | START DATE | FINISHED DATE |
|---|---|---|---|
| 3.1 | Converting Design to Code | 30/04/2013 | 02/05/2013 |
| 3.2 | Prototyping | 02/05/2013 | 05/05/2013 |
| 3.3 | Training | 05/05/2013 | 08/05/2013 |
| 3.4 | Change Over | 12/05/2013 | 15/05/2013 |

**Table 3.3: Task Analysis – Implementation**

| TASK # 4 | TESTING | START DATE | FINISHED DATE |
|---|---|---|---|
| 4.1 | Unit Testing | 15/05/2013 | 18/05/2013 |
| 4.2 | Integration Testing | 18/05/2013 | 21/05/2013 |
| 4.3 | System Testing | 21/05/2013 | 24/05/2013 |

**Table 3.4: Task Analysis – Testing**

| TASK # 5 | PROJECT REPORT | START DATE | FINISHED DATE |
|---|---|---|---|
| 5.1 | Organizing Report | 24/05/2013 | 29/05/2013 |
| 5.2 | Type Hand Written Document | 29/05/2013 | 04/05/2013 |
| 5.3 | Produce Final Report | 04/06/2013 | 09/06/2013 |

**Table 3.5: Stask Analysis – Project Report (See Appendix on page 61 for the table)**

*F. Requirement Specification*

The system specification specifies the software and hardware requirement of the online auction website. This is run on the client server platform or architecture.

**Hardware:** The hardware selected for the various servers is extremely important. Without enough resources, server cannot work properly and the result would be bad news for the system.
The system requirement for the client personal computer (PC)
- o Pentium III or 4 or compatible (500 MHz or better)
- o 128 MB RAM
- o 100 MB disk space (or higher)
- o Internet connection

o The following operating systems are supported Windows 95,98,2000 XP, Window 7 and windows8.

The system requirement for the host/server
  o Pentium 4 or better (1.6 MHz)
  o 1 GB RAM
  o 1 GB disk space
  o Network Interface Card
  o The following operating systems are supported Windows 95,98,2000 XP, Window 7 and windows8.

**Software:** Certainly, hardware comes in all shape, size and color. But without specific software telling server what to do, all those computers are useless. The most important role of the software is to allow the server to the job for which it is assigned**.** MySQL was our first choice for Relational Database Management (RDBMS) for storing and retrieving data on the system, it provides fast access to data, easily queries to extract data, has built in mechanism for dealing with concurrent access, provides random access to data and has a built in privilege system

PHP was used as part of our web programming because the site is intended to: interact with users, receive feedback and buy items on the online auction website.

Dreamweaver CS3 was used to design the site. Apache Server was chosen and used because it is a highly configurable web server with modular design. It is am open source technology which works well with PHP and other scripting language.

*System Requirement Specification*
  o The System has the ability to display a window that enables user to search for ant item on the site.
  o The main front page of the site for the user shows the user the navigation to other link to other pages.
  o The system displays categories of items for auction
  o Ability to display prices of the item sold
  o The system provide user with a login page where they can login and have a live bid on items.
  o Interoperability: The system can be linked up with other system and run application created on other machines- is capable to talk with other computers and share information.
  o  A faster server to handle the database – the system is built on high speed server.
  o A user can place bid for an item.
  o The system has the capabilities of displaying the highest bidder of a live bid session.

## IV. THE DESIGN AND ANALYSIS OF THE PROPOSED SYSTEM

This chapter will describe the design and analysis of the proposed system which will allow users to sell and buy anywhere on campus at their convenience The new system will therefore take into consideration the existing software's on auction website in order to enhance efficiency and also build a user friendly site such that user's can easily transact business with little or no difficulty**.**

Entity Relationship Diagram and Data Flow Diagrams will be used to describe the proposed system and how it will work. We will also look at the various component of the proposed system that is undergoing design and implementation. We will start by looking at the conceptual view of the proposed online auction website (KAIL)
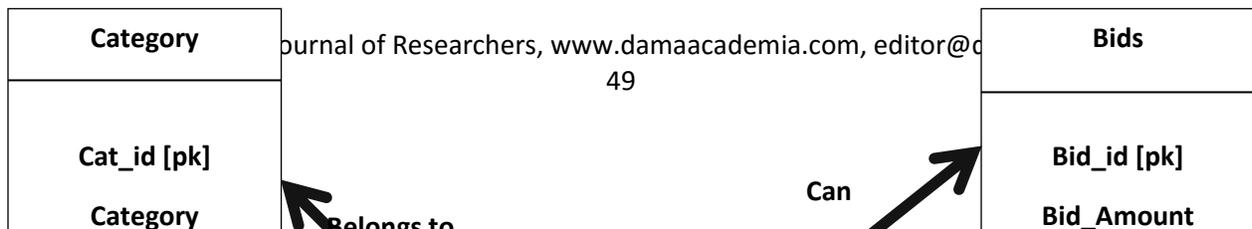
**Figure 4.0(See Appendix on page 61 for this figure): Conceptual view of the proposed online Auction Website (KAIL)**

**MULTIPLICITY OF THE RELATIONSHIP**

| ENTITY | MULTIPLICTY | RELALATIONSHIP | MULTIPLICITY | ENTITY |
|--------|-------------|----------------|--------------|--------|
| Item | 1..1 | Has | 1..1 | Image |
| User | 1..1 | Can Buy | 1..* | Item |
| User | 1..1 | Can | 1..* | Bid |
| User | 1..1 | Will Upload | 1..* | Image |
| Item | 1..* | Belongs to | 1..1 | Category |
| Item | 1..1 | Can Be | 1..* | Bid |

**Table 4.0(See Appendix on page 61 for the table): Data Dictionary of the Conceptual View**
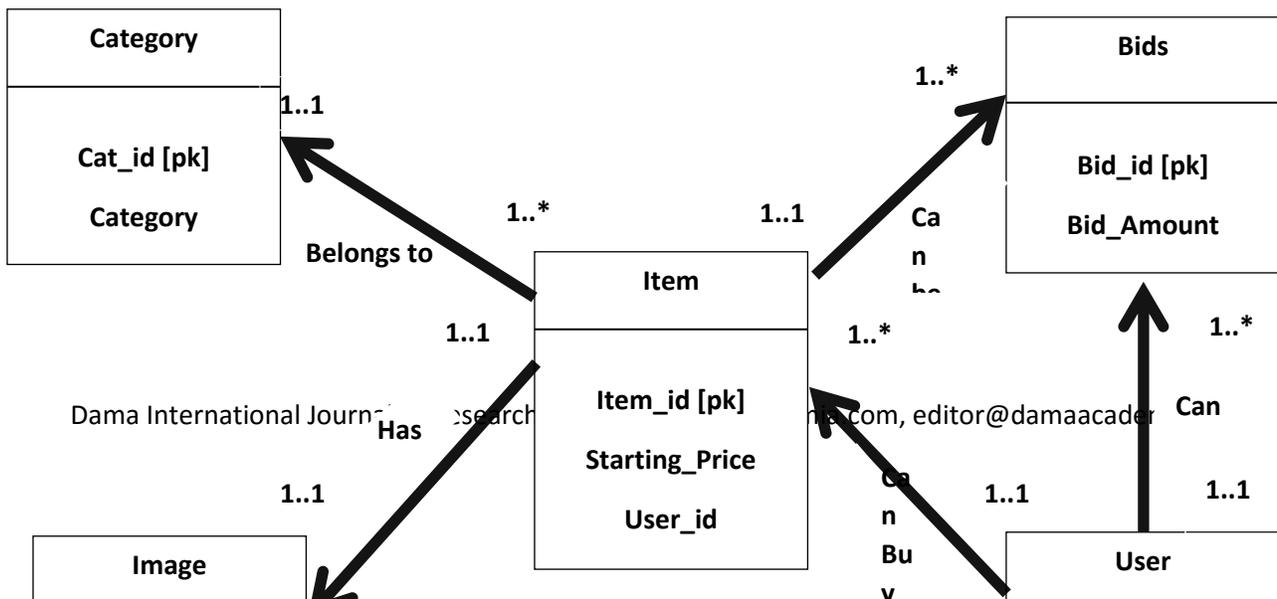
**Can Upload**

**Figure 4.1(See Appendix for more details): Logical Data Model of the Online Auction Website (ERD)**

*Database Construction*
Tables used in constructing the database are as follows.

**User**

| User_id | UserName | Password |
|---------|----------|----------|
| 001 | Ishmael Amonoo | Xxxxxxxxx |
| 002 | Samuel Appiah | ******** |

**Image**

| Image_id | Item_id | Name |
|----------|---------|------|
| 03 | 100 | Hp Laptop |
| 04 | 101 | Sephinr |

**Item**

| Item_id | User_id | Item_Name | Starting_Price |
|---------|---------|-----------|----------------|
| 101 | 001 | Chelsea Jersey | GH 100 |
| 100 | 002 | Barcelona Jersey | GH 103 |

**BID**

| Bid_id | Bid_Amount | User_id | Item_id |
|--------|-----------|---------|---------|
| 0001 | GH 1000 | 001 | 101 |
| 0002 | GH 500 | 002 | 100 |

**Category**

| Cat_id | Category | Item_id |
|--------|----------|---------|
| 023 | Watches | 101 |
| 024 | Jerseys | 100 |

## SCHEMAS

The following schemas were used in building our database for the online auction website.

**USER**

| ATTRIBUTES | DATATYPE | LENGTH |
|------------|----------|--------|
| User_id | TinyInt | 20 |
| UserName | Varchar | 30 |
| Password | Varchar | 20 |

**IMAGE**

| ATTRIBUTE | DATATYPE | LENGTH |
|-----------|----------|--------|
| Image_id | TinyInt | 20 |
| Item_id | Int | 30 |
| Name | Varchar | 100 |

**ITEM**

| ATTRIBUTE | DATATYPE | LENGTH |
|-----------|----------|--------|
| Item_id | TinyInt | 20 |
| Cat_id | Int | 20 |
| User_id | TinyInt | 10 |
| Starting_Price | Float | ____ |
| Name | Varchar | 100 |
| Description | Text | ____ |
| Dateends | Datetime | ____ |

**CATEGORY**

| ATTRIBUTE | DATATYPE | LENGTH |
|-----------|----------|--------|
| Cat_id | Int | 20 |
| Category | Varchar | 100 |
| Item_id | TinyInt | 20 |

### G. Design

User satisfaction with a new system depends on a significant extent on the system's ability to deliver performance that is acceptable and consistent. A web based interface was created using Hypertext Markup Language (HTML), Hypermedia Preprocessor (PHP) codes was used to provide dynamism and MySQL was used to create the database and hosted in Apache database server. In designing this system, we used unified software development process which adopt the UML standard notation for easy and effective communication between the system developers and the domain expert. We will start by designing the

sequence diagrams, since it will help us allocate behavior to our classes and also graphical means of depicting the interaction and flow of event, then we will proceed to the collaboration diagrams which shows the relationship between objects. The UML notation serves as a means of virtualizing, specifying, construction and documenting artifact of a software system. The UML Diagrams employs includes

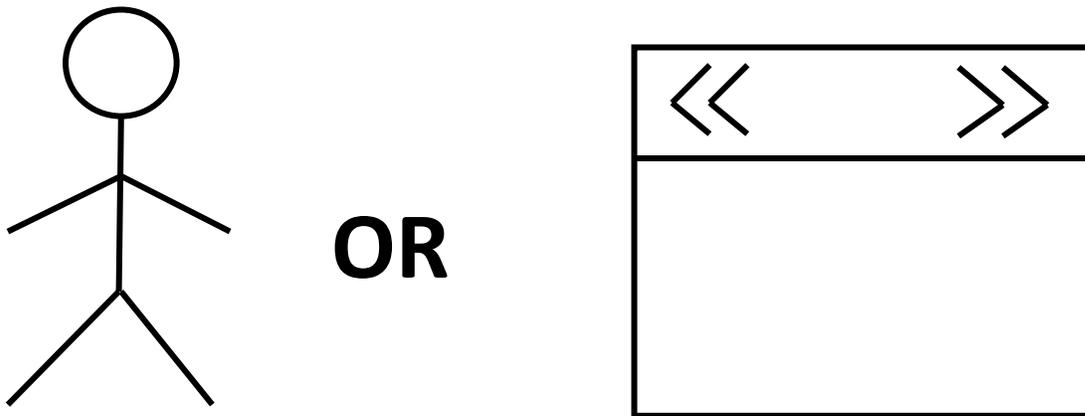- o Use Case (Diagrams)
- o Class Diagrams
- o State Chart
- o Interaction Diagrams
- o Activity Diagrams

Each Diagram uses symbols and its own unique diagrammatic representation to communicate or convey a definition of the system to the end user. The following list each represent a diagram and its communication tools.

**USE CASE (DIAGRAM)**
A use case diagram consists of three components and what they represent. They are

➢ **Actor**

This represents entities that interact with the system. The actor is represented by the figure below



**Figure 4.2(See Appendix on page 61 for the figure): Actor used in Use Case Diagram or a class icon with the system stereotype placed above the class name as shown above.**

➢ **Use Case**

This is used to represent dialogue between the actor the system. It is represented by an oval shape below.
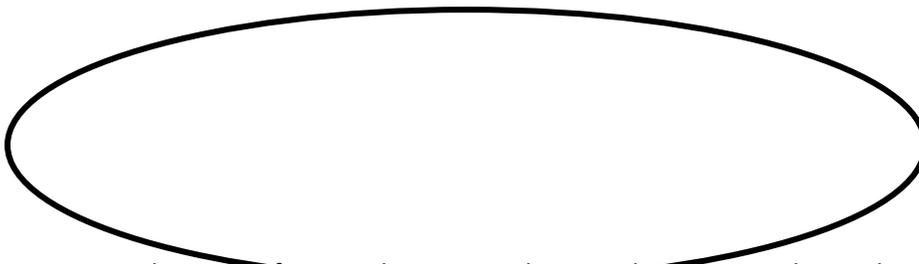
**Figure 4.3: Dialogue between an actor and the system used in Use Case Diagram**
  ➢ **Communication Link**
This is also used to connect one or more actors as well as use cases and is represented by a straight line as shown below.

  ➢ **System Boundary**
This defines scope of system being developed and is represented by a rectangle.

**Figure 4.4: (See Appendix on page 61 for the figure) Object used to show system Boundary in a Use Case Diagram.**

**CLASS (DIAGRAMS)**
The unified process uses class diagrams to model the classes (abstract data type that support inheritance) and the static relationship among them including association and generalization. The unified process has three main classes
  ➢ **Entity class**
Models information that is long-lived as shown below**.**
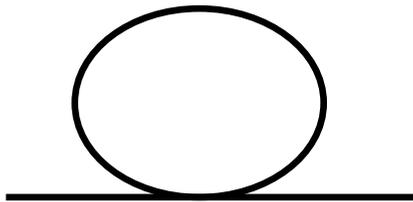
**Figure 4.5(See Appendix on page 61): Entity class in UML Diagram**

  ➢ **Boundary Class**

This also models input, output and report as shown below.
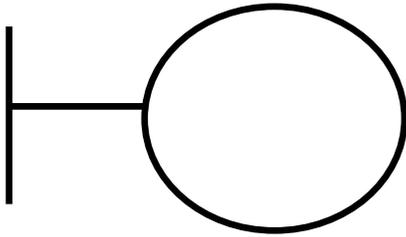


**Figure 4.6(See Appendix on page 61): Boundary Class in UML Diagrams**

> **Control Class**

Models computation and Algorithms as shown below
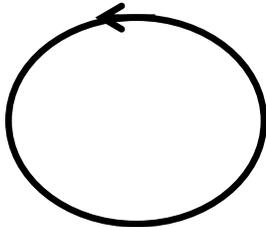


**Figure 4.7(See Appendix for more details): Control Class in UML Diagram**
These are stereotypes i.e. Extensions of UML to define additional construct to models a specific system accurately i.e. entity, boundary and control classes respectively as shown below.



**The Class symbols is**
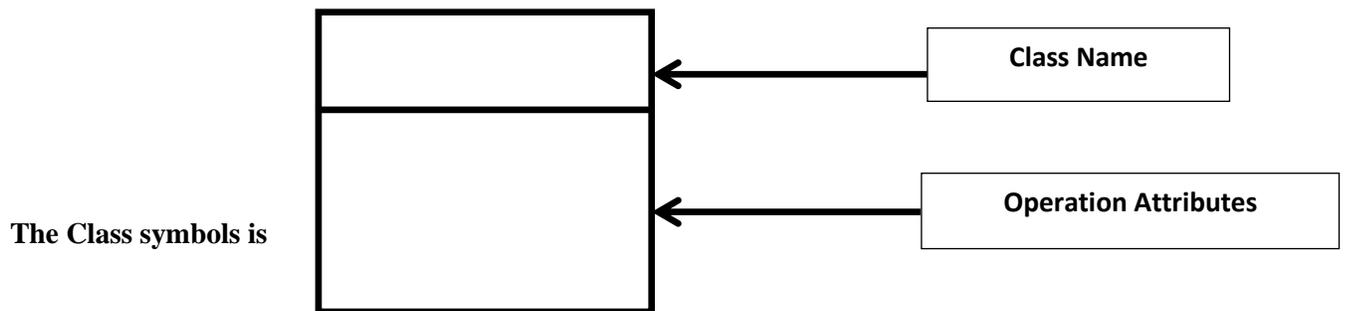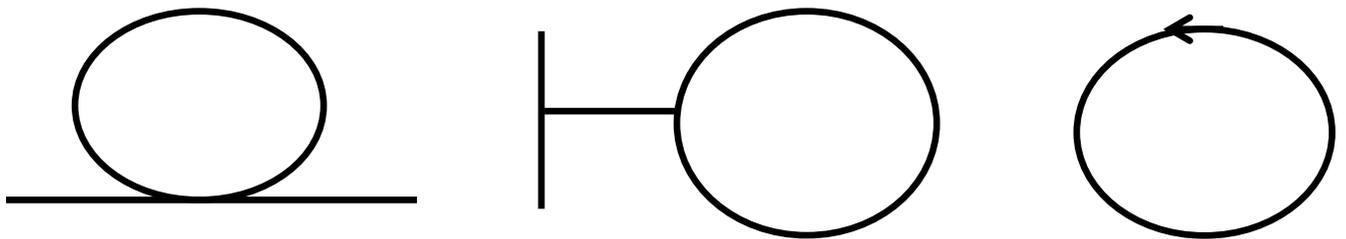


**Figure 4.8(a) (See Appendix on page 6061): Stereotypes for modeling in systems in UML**

## INTERACTION DIAGRAMS

In the form of collaboration and sequence diagrams they show the way objects interact with one another as message are passed between them. They represent the dynamic aspect of the system. i.e. to describe or specify interaction of object when a use case is invoked. Both the collaboration of object in a scenario but the sequence diagram emphasizes the time sequence of message.
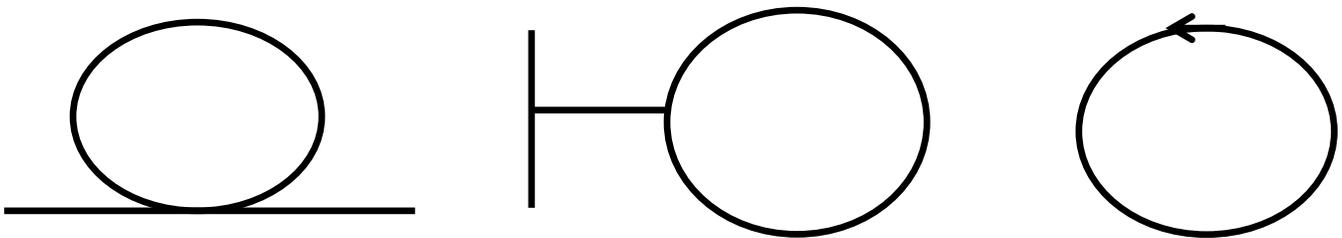
Collaboration diagram use – stereotypes as shown below



**Figure 4.9(b) (See Appendix on page 62): Stereotypes for modeling in system in UML**

To model a system they use numbering to specify the order of the message as they are sent from object to object.

## SEQUENCE (DIAGRAMS)

It uses it own notation to identify objects in scenario of a use case. They have two dimensions representing the passage of time and how objects interact with each other. The interacting objects are placed horizontally at the top of the sequence and messages are passed them. The symbol used are listed below

> **A Lifeline**

A dashed vertical line that indicate object existence over time



> **Activation Box**

Indicate when an object is active over its existence is represented by a thin rectangle

**STATE CHARTS**

Models the dynamic behavior of the system and shows the state, specific values of attributes, event that causes the transition between states (subjects to guard) and actions taken by the objects i.e. the way objects react to specific events.

The symbols used to model a state chart includes

- - Solid Circle to model the start state
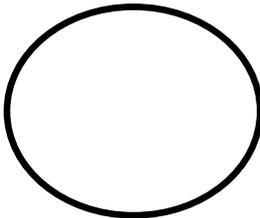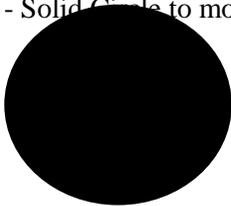
- - End State – (Final state)

**Events -** Causes transition between states
**Transition –** movement from one level to another
**Guard –** a condition being tested, can be true or false
**Action** – response to a condition
**Activity diagram –** show how events that occur at the same time are coordinated

   *H.  Context Diagram*

The design aspect of the online auction website was modeled using mainly **USECASE** Diagrams to model the interaction between actors (external user of the system) and the software product itself. This presented all scenario of the **USECASE.** The entity classes were then extracted using the noun extraction method Secondly **interaction diagrams** are drawn to depict the interaction between object and time sequencing of message as they are sent from object to object. The messages are numbered in the order in which they are sent in specific scenario as depicted below.

The corresponding **SEQUENCE DIAGRAM** is depicted below, the dashed vertical lines indicate the object existence overtime, whiles **the activation box** indicate when the object is active

### a. Sequence Diagram
The sequence diagram helps us to allocate behavior to our classes as it allows graphical means of depicting the interaction and flow of event between the classes over time**. Lifeline** starts when the object is created. **Activation Box** – the narrow vertical rectangle shows when a relevant object is active.
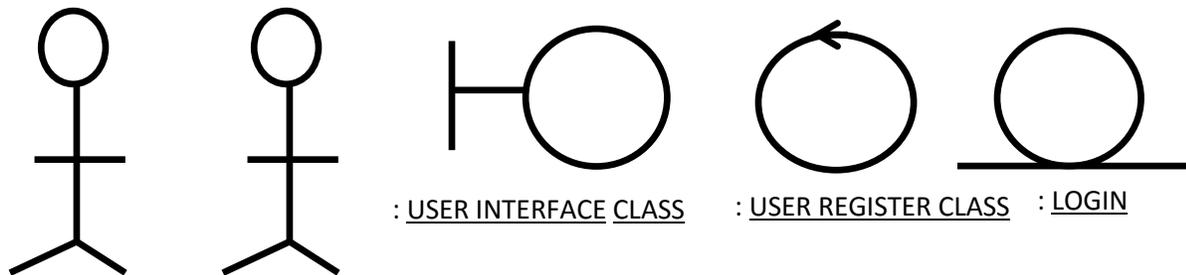


: USER INTERFACE CLASS          : USER REGISTER CLASS          : LOGIN

**Figure 4.9(c) (See Appendix on page 62): A sequence diagram depicting the flow of event in the system.**

### b. *Collaboration Diagram*

This collaboration diagram depicts collaboration between objects as message are passed between them in a order as shown below

The collaboration diagram shows in numbered order how message are sent form object to object. Thus message 1. is followed by 2 to 13 in that order.
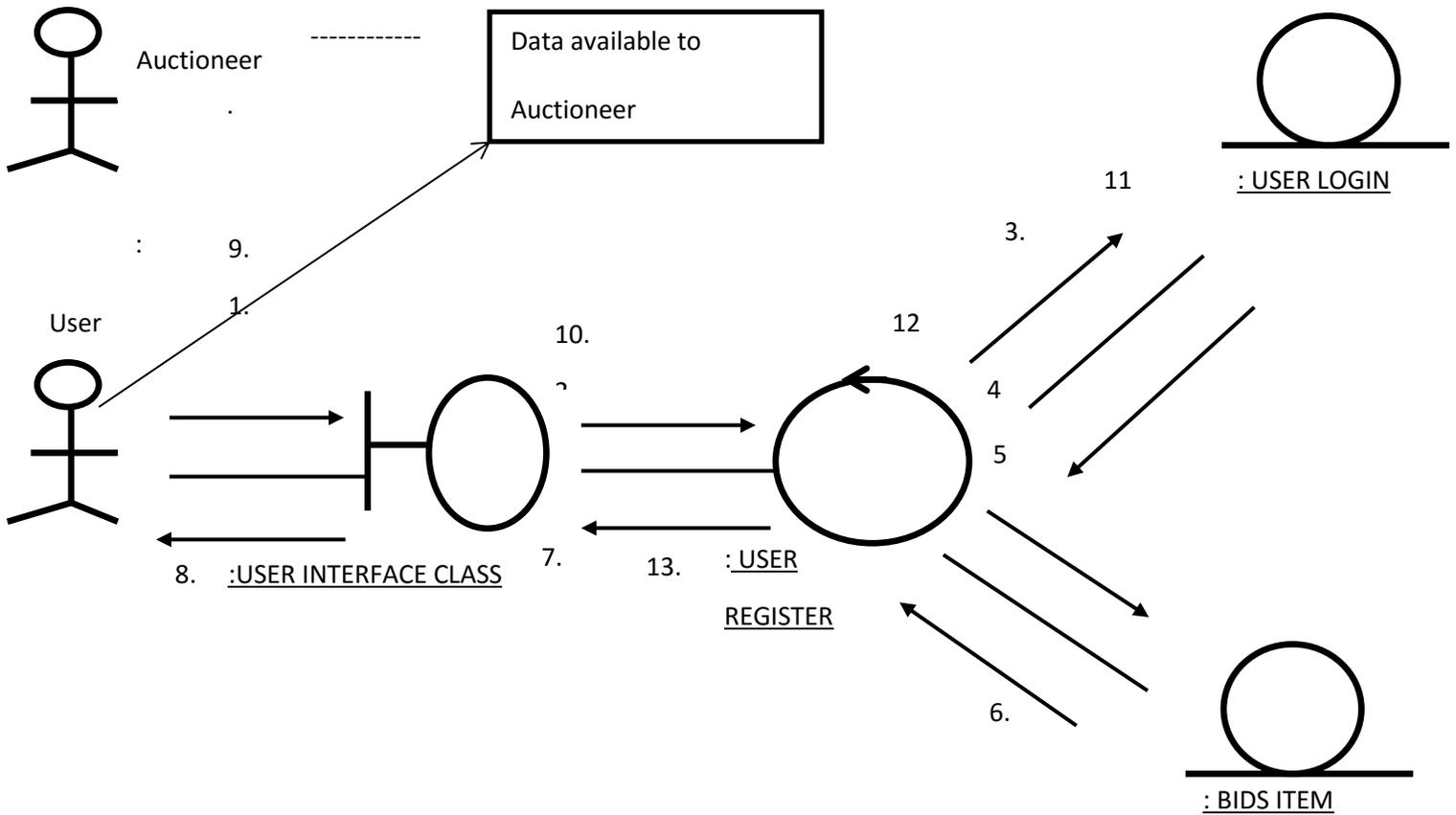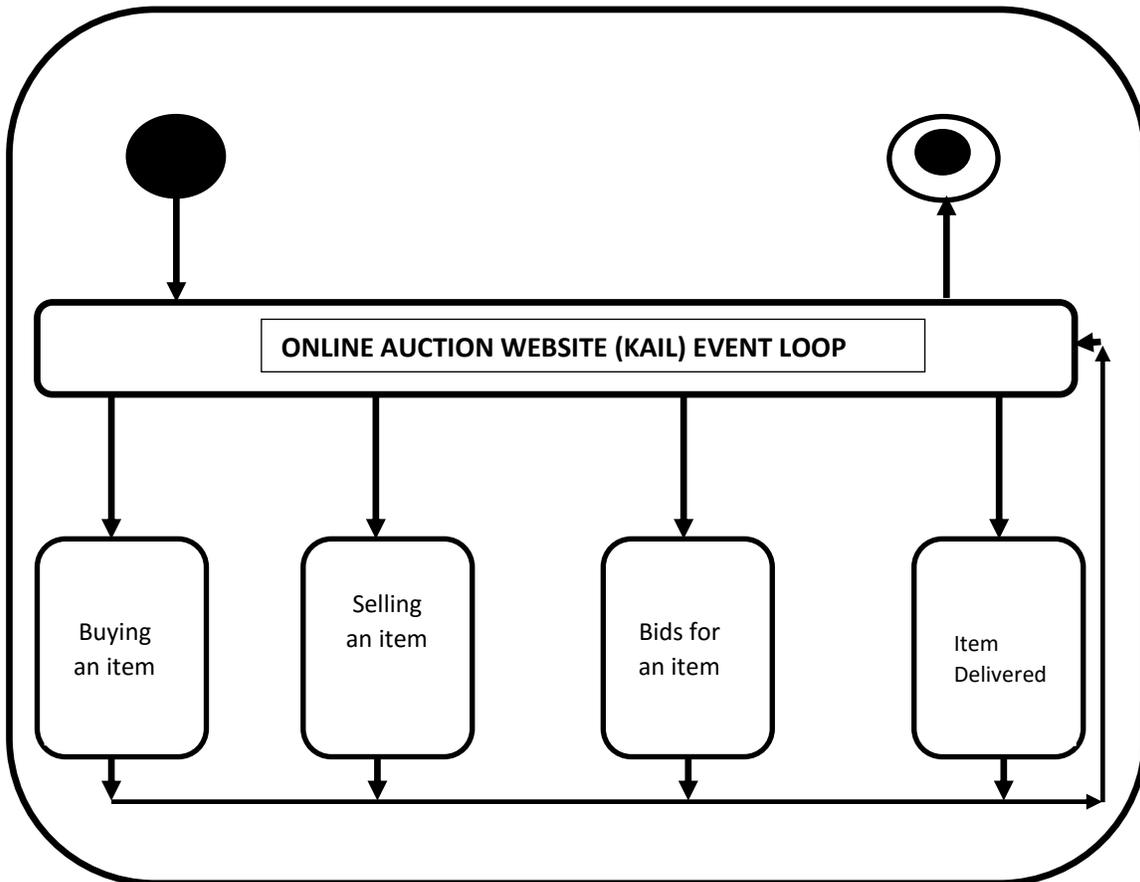


**Figure 4.10 (See Appendix on page 62 for the figure): Collaboration Diagram showing the relationship between objects**

The auctioneer makes available the information he has to the customer who enters the information into the system. This is depicted by the dashed lines from the rectangle with the slanted edge. Details of an item are displayed when a user register and eventually login into the system. The next condition depends whether the user has register then he or she can bid for an item, buy an item or do listing on the site. Finally if a user bid for an item and wins the item is delivered to him by the auctioneer representative.

### I. *Data Flow Diagram*

The dynamic aspect of the system is modeled using a state chart (flowchart). The state chart show specific value of attributes of objects and events that causes transition between states (subject to guard) and action taken by objects. Dynamic model of the online auction website (KAIL) is depicted below using a state chart.

## STATE CHART



**Figure 4.11(See Appendix on page 62 for the figure): State chart depicting the Dynamic Model of the Online Auction Website (KAIL)**

As depicted in the dynamic model above, at the initial state modeled by the deep black circle, the system moves by a transition to the state online auction website event loop. In this state te system can move into four state subject to condition i.e. if and only if the conditions are true will there be a transition to one of the following state ;

    a.   **Buy an item**
    b.   **Sell an item**
    c.   **Bids for an item**
    d.   **Item being delivered**

If any of the condition **a, b, c, d** is true there will be transition to that particular state that has the condition or guard to be true

Thus the statement uses this equation i.e. Event (guard) / action which simply means when option **a**. is selected a message is received that is an event occurring and the software moves from state online auction loop to state **a** when the condition is true. In summary the customer select each of these options to perform operation a, b, c, d if all operation are completed **quit** is selected to return to the item to final state.
The state chart diagram above depicts the entire possible scenario.

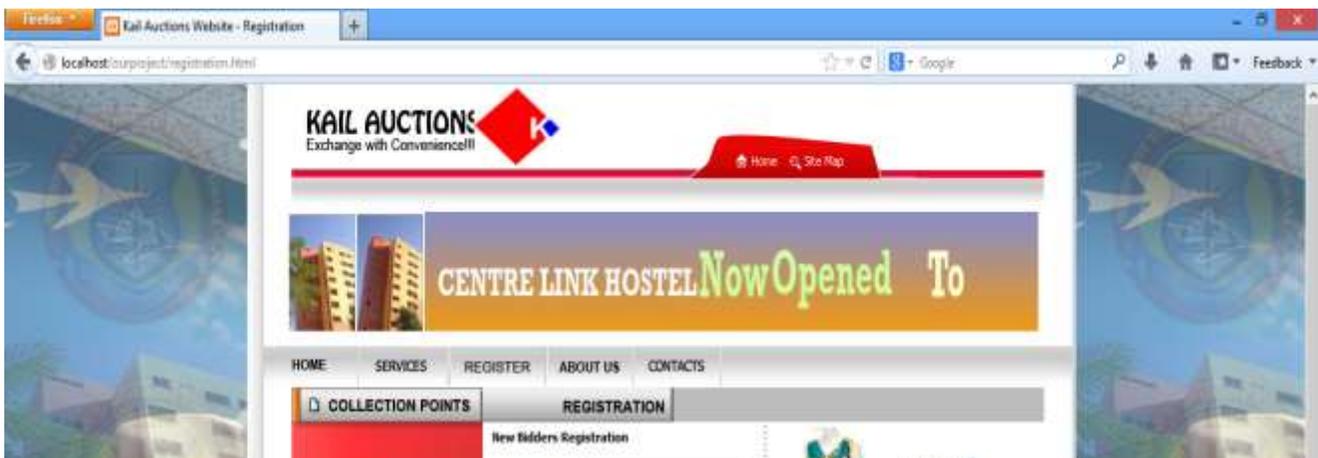**INTERFACE OF THE ONLINE AUCTION WEBSITE (KAIL)**
*The Home Page*
The first page is the home page of the online auction website that allows user to sell and buy items anywhere on campus. This page is illustrated in figure 4.12 and can be found in appendix on page 61. It shows the items that are available for auctioning and gives different categories that can be chosen from without any difficulty. On this page user who have registered with the site is provided with a login section to login into onto the system.



**Figure 4.12(See Appendix at page 62 for the figure): The Home Page of the Online Auction Website**

*Registration Page*
This page allows potential users who have not registered the opportunity to register on the site, so that they will be able to buy items and also bid for an item at the site. The figure below depicts the registration page of the online auction website.

**Figure 4.13(See Appendix at page 62 for the figure): The Registration Page of the Online Auction Website (KAIL)**

*Item Description Page*

This page describe each item that is available for auction, the item present state is clearly stated before a user click to bid for the item at the bidding page. The figure below depicts the item description page of the online auction website.
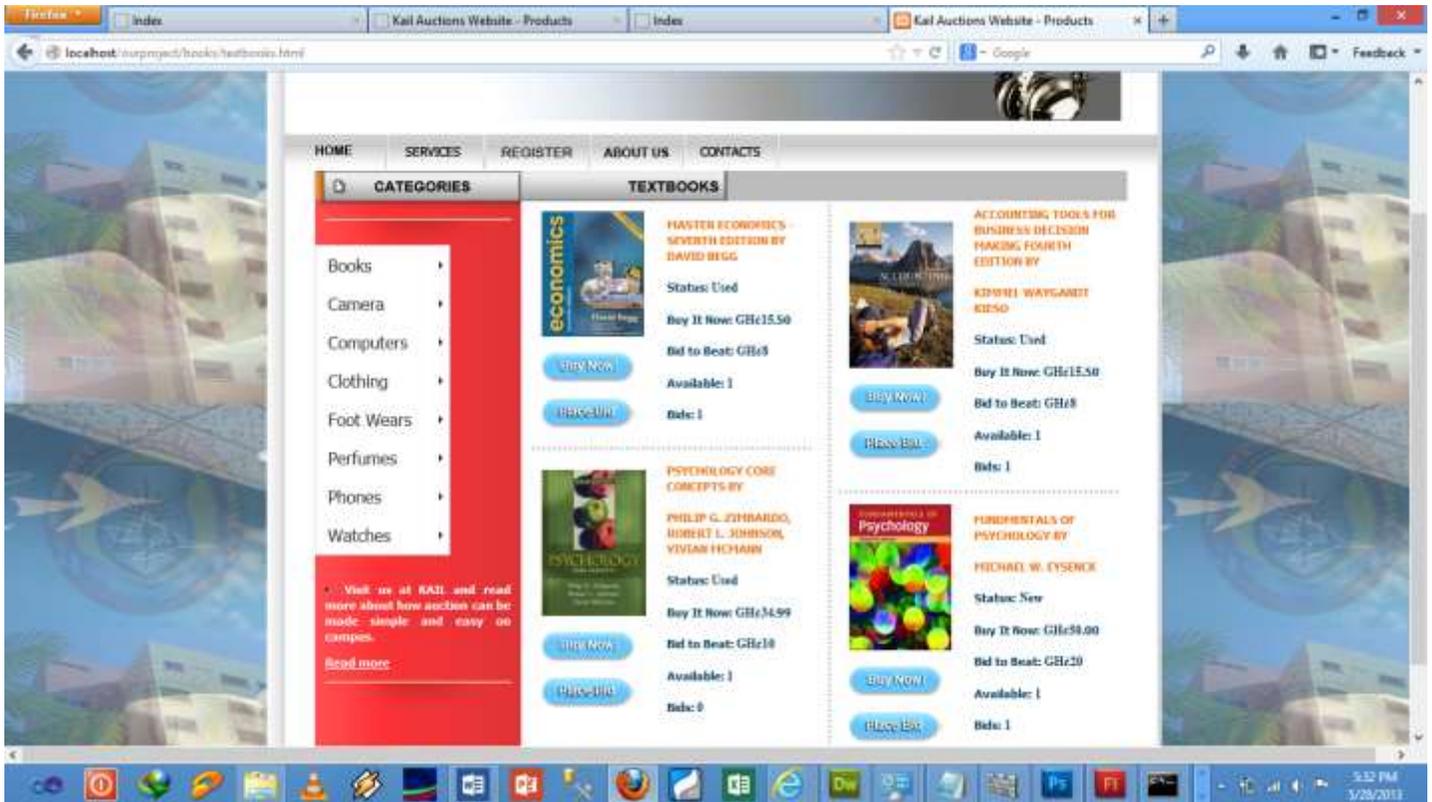


**Figure 4.14(See Appendix at page 62 for the figure): The Item Description Page of the Online Auction Website (KAIL).**

*The Bidding Page*
At this page the user is provided with a place where he or she will be able to perform live bidding by typing his amount for the particular item on bid. At the close of the auction, the highest bidder wins the bid. Figure 4.15 depicts the bidding page of the online auction website (Kail).

**Figure 4.15(See Appendix at page 62 for the figure): The Bidding Page of the Online Auction Website (KAIL).**



## V. CONCLUSSION AND RECOMEMDATIONS

*A. Conclusion*
The global competitiveness has brought business change and this change is all around us and the pace is ever increasing. The time to market items or products is decreasing year on year, privatization has brought radical change to public institution and increased globalization in many sectors has brought the challenge of managing across national boundary and cultures. Organizational change is now common place and given this you might be tempted to suppose that some universally applicable rules would have emerged to guide you when planning a new IT project within a changing environment.

All new IT systems bring a range of change of associated change with them. These may be change to business process and procedures, new roles and responsibilities, organizational restructuring, new equipment or facilities or new skills to learn. All of these involve people and it is the people within any organization who are key to the success of any IT implementation as much as we all dream KAIL to remain at the top in the mix of tough competition management must consider training across broad especially users

(students). The four broad reason for any organization to invest in large scale-corporate IT development programmes:

➢ Business Survival
➢ Improved Efficiency
➢ Potential competitive advantage
➢ External forces such as legislative change, privation merger and so on.

The system was developed because of the tedious way that student go through before getting an item or product to buy or sell on campus and the difficulty involved in marketing a new product. The online auction website will help enhance the process of buying an item online and also have a wider market to deal with since it hosted on the internet. The size of the software makes it convenient to use and also meet the entire requirement specified in the requirement specification document. Although the duration of the project was very short we were able to complete the project on schedule.

This project has thought us about how to apply all theories we have read in books and what we experience in lecture. It has also given the practical experience in system development and enables us to encapsulate in my project the main feature if not all of the web enabled interface which was constructed and managed within the time constraint of our project development. The project was a worthwhile development and although we faced challenges in aspect of it, we were able to surmount this difficulty to enable build a reliable and well-structured system conforming to all specifications.

**Difficulties encountered:** Due to time constraints and lack of technical knowhow, we could not developed an administrative section of the online auction website and online payment system could not be achieved. However, the team is still researching on how to add all those features for user satisfaction.

**Success Achieved:** Links to various pages of the system was tested and was successful. Various JavaScript functions and PHP scripts also run effectively on the apache web server.

**B.** *Recommendations*

Using the internet to conduct e-business by companies is increasingly becoming standard operating procedure for any business. Implementing web-based business help to tap previously unattainable market and earn untold profits. (By a web content writer (Robert C. Elspenpeter) in his book "e-business" A Beginners Guide).

One thing which is not permanent in business world is change. Therefore, the most successful companies are those that successfully harness and exploit innovation. The computer, when properly used, serves as springboard for productivity and is a powerful instrument for effectiveness and efficiency.

We therefore recommend that the administrative section of this work would be looked at by interested researcher's who have interest in the field of study. Also payment system that will allow user to pay money online for their goods to be delivered to them could be enhanced.

**REFERENCES**

1. The Net Continues to Transform Business Models 03/31/99 By Richard Karpinski, Internet Week http://www.techweb.com:80/wire/story/TWB19990331S0019.

2. Internet Bargains May Be More a Matter of Method than Price latimes.com, Monday, June 7, 1999 By JONATHAN GAW available for fee at latimes.com archive. http://www.latimes.com/archives/

3. PricewaterhouseCoopers' 'E-Business Technology Forecast' - Section I "E-Business Platforms and Applications" http://www.pwcglobal.com/extweb/service.nsf/DocID/DD30564345720A5B8525679E000431F?OpenDocument.

4. ! Allen G. Breed, Associated Press Going ... going ... sold to man with the 28800 modem - September 14, 1998 http://claymore.engineer.gvsu.edu/~beesleya/egr345/stf/qauct14.htm

5. Cohen, A. (2002). The perfect store: Inside eBay. Boston: Little, Brown and Company.

6. Andrews, T., & Benzing, C. (2007). The determinants of price in internet auctions of used cars. Atlantic Economic Journal, 35, 43–57.

7. Wilcox, R. T. (2000). Experts and amateurs: The role of experience in internet auctions. Marketing Letters, 11(4), 363–374.

8. Ockenfels, A., & Roth, A. E. (2006). Late and multiple bidding in second price internet auctions: Theory and evidence concerning different rules for ending an auction. Games and Economic Behavior, 55, 297–320.

9. Bajari, P., & Hortaçsu, A. (2003). Winner's curse, reserve prices and endogenous entry: Empirical insights from eBay auctions. Rand Journal of Economics, 2, 329–355.

10. Peters, M., & Severinov, S. (2006). Internet auctions with many traders. Journal of Economic Theory, 130, 220–245.

11. Stryszowska, M. (2005). Late and multiple bidding in simultaneous and overlapping second price internet auctions. CentER discussion paper.

12. Nekipelov, D. (2007). Entry deterrence and learning prevention on eBay. Dissertation, Duke University. Retrieved from http://www.cemfi.es/REStour/Nekipelov.pdf.

13. Tung, Y. A., Gopal, R. D., & Whinston, A. B. (2003). Multiple online auctions. IEEE computer, 88–90.

14. Jin, G. Z., & Kato, A. (2006). Price, quality and reputation: Evidence from an online field experiment. RAND Journal of Economics, 37, 983–1004.

15. Sailer, K. (2006). Searching the eBay marketplace. CESifo working paper no. 1848. Retrieved from http://www.ifo.de/pls/guestci/download/CESifo+Working+Papers+2006/CESifo+Working+Papers+ November+2006/cesifo1_wp1848.pdf.

16. Dewan, S., & Hsu, V. (2004). Adverse selection in electronic markets: Evidence from online stamp auctions. The Journal of Industrial Economics, 52, 497–516.

17. Diekmann, F., Roe, B. E., & Batte, M. T. (2008). Tractors on eBay: Differences between internet and in-person auctions. American Jou.
18. Robert, C. Elenpeter and Tony J. Velte E-Business A Beginner Guide's. ISBN 0-07-212744-9.