



Bilkent University

Department of Computer Engineering

Senior Design Project

Project short-name: BidIt

Project Specification Report

Efe Erođlu, Muhammet Kamil Gök, Ahmet Serdar Gürbüz, Rumeysa Özaydın, Hasan Yıldırım

Supervisor: Uđur Doğrusöz

Jury Members: Çiğdem Gündüz-Demir and Can Alkan

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1 Introduction

Auction is a process of buying or selling products based on biddings. It is a good alternative for fixed price selling mechanisms. The word comes from Latin word “augere” which means “to increase” [1]. One of the most common forms of auction is open ascending price auction where participants bid openly and every bid must be higher than the previous bid. As long as there are at least two bidders, the auction continues. The other form is the sealed-bid first price auction where bidders submit their bids privately in sealed envelopes and the highest bidder wins [1]. The popular goods taking place in auctions are antiques and rare collectibles.

When it comes to online auctions, some conditions mentioned above changes. The time is limited and the highest bidder at the end of the time buys the product. Also, nowadays, auctions do not have to be about antiques or rare objects. People can sell their second handed products to get rid of them which makes it reasonable to have a marketplace in order to meet the demands of these people.

In Turkey, online auctions are mostly taking place in Facebook comments, which is not very effective. We propose an alternative platform to substitute this inconvenient system with better user experience. The platform will have the functionalities that can enable users to access a marketplace for a shopping experience based on bidding.

1.1 Description

In our senior project, BidIt, we aim to develop an easy-to-use auction platform where users can sell their products. It will be a mobile application that is cross-platform adaptable for both Android and iOS. We will have two different use cases for users which give them an option to buy and sell. For selling items, users will define their items by writing a caption and adding images. For categorization, the best-suited category will be suggested by using the image and the description of the item but the user can manually change the category specification later. Users can select the time for their advert by determining the publish time and the length of the

advert. Users are not allowed to remove the product from the marketplace after it got a bid or bought. Users will define an initial start price where other users can bid to buy this item and the highest bidder at the end of the auction can buy the item. Also, users can optionally define a buy now price where other users can buy the item instantaneously. When publishing an item, the platform will suggest optional pricing for the item from the description. This platform will automatically take the payment from the auction winner, and after the consolation of both buyers and sellers for the transaction, the seller will receive the payment. Buyers can review the sellers. Users can not bid on their own adverts in any manner. Users will get notifications about the auction dates, prices, etc. about their interested items and subscriptions. When a user is out-bid, the user will be informed with a notification instantly.

1.2 Constraints

1.2.1 Language Constraints

- Our application will support both Turkish and English languages.

1.2.2 Economic Constraints

- The webpage is on the Github domain which is free to use.
- Github will be used for Version Control and code sharing which is free to use.
- Free APIs will be used.
- Open-source libraries will be used.

1.2.3 Implementation Constraints

- The application will be working on mobile operating systems which are Android and IOS.
- Client-Server model will be used as application structure.
- Flutter will be used in order to provide cross-platform application development.
- Version control will be sustained via Git and the source code will be hosted on Github.

- Ebay Taxonomy API is planned to be utilized for automatic categorization, taxonomy of the product [2].
- Object Oriented Design principles will be adapted in the design steps and appropriate design patterns will be used as necessary.
- Sign in with Facebook authentications can be used to spend less time in registration according to the users preferences [3].

1.2.4 Social Constraints

- The application can be used by anyone who has a smartphone.

1.2.5 Ethical Constraints

- The personal information of users will not be shared.
- User data will be encrypted.
- Code of Ethics [4] will be followed.
- Any external software or library used will be properly referenced.

1.2.6 Timeline Constraints

Development of our product will be parallel with the following schedule [5],

- Project Specifications: **Monday, October 12, 2020**
- Analysis Report: **Monday, November 9, 2020**
- High-Level Design Report: **Monday, December 21, 2020**
- Low-Level Design Report: **Monday, February 8, 2021**
- Final Report: **Friday, April 30, 2021**

1.2.7 Sustainability Constraints

- We will closely follow and consider user feedback in order to improve the product.
- Bugs will be followed and updated from the initial release until the deadline.

1.3 Professional and Ethical Issues

Since the users have to sign up in order to sell or bid the products, we need to keep their usernames and passwords. In order to manage this in a safe manner, we are going to store the hash values of the passwords in our database. Also, the personal information of the users such as phone number, name, and surname will not be shared by other users or third parties without getting permission.

The camera or storage permission will be needed when a buyer is uploading or taking pictures of the products. Before accessing the phone's camera and storage, required permissions will be taken from users.

2 Requirements

2.1 Functional Requirements

These following functions will be available for the users.

- Users can sell their products by indicating their caption, description and images. They will also initialize the start price and optionally a buy-now price. The expiration time of an advertisement will be indicated by the user and it can be at most 15 days.
- Users can bid on the items to join the auction for the product or use the buy-now option to acquire the item directly.
- Users can rate previously interacted users.
- Users can monitor other user's reviews.
- Users can search for an item by name or category.
- Users can have different lists. They can add an item to personalize their lists.
- Users can browse the marketplace for the currently open sales.
- BidIt will notify buyers when someone out-bid their bid. Also, sellers will be notified when someone bids their product.

- Users can see the previously sold products of any user.
- BidIt will estimate the price for an item so that users can roughly have an understanding of the price of their items before publishing their advertisements.
- Users can purchase an item with their own credit cards or virtual payments.
- BidIt will automatically categorize the product. The category subtree of the product will be generated automatically according to the title and the image.
- BidIt will do the authentication of the users provided their usernames and passwords.
- Users can update their account information
- Users can delete their accounts

2.2 Non-functional Requirements

In the following subsections, the non-functional requirements are divided into subsections as reliability, usability, extensibility, compatibility and security.

2.2.1 Reliability

- The application must not randomly crash. It must be able to recover quickly from any errors.

2.2.2 Usability

- The BidIt application should have a user-friendly interface that will allow all types of users to be able to easily adapt.

2.2.3 Extensibility

- Design of the application should be written following the Object Oriented Programming paradigms in order to add new functionalities easily.

2.2.4 Compatibility

- The application will be cross-platform and it will be adaptable for Android and iOS.

2.2.5 Security

- Personal data of the user such as name, surname, and phone number must be protected by the application to maintain security.
- The money transactions are all covered with an API.

3 References

[1] V. Krishna, *Auction theory*. Amsterdam: Elsevier, 2010.

[2] "Taxonomy API," *eBay Developers Program*. [Online]. Available: <https://developer.ebay.com/api-docs/commerce/taxonomy/overview.html>. [Accessed: 11-Oct-2020].

[3] "Facebook Login: Developer Documentation," *Documentation - Facebook for Developers*. [Online]. Available: <https://developers.facebook.com/docs/facebook-login/>. [Accessed: 11-Oct-2020].

[4] "Code of Ethics," Code of Ethics | National Society of Professional Engineers. [Online]. Available: <https://www.nspe.org/resources/ethics/code-ethics>. [Accessed: 10-Oct-2019].

[5] *CS491-2 Senior Design Project I-II*. [Online]. Available: <http://www.cs.bilkent.edu.tr/~cs4912/current/>. [Accessed: 11-Oct-2020].