BitBid Design v1.0

Overview

BitBid is an auction website, where sellers sell items to buyers. The goal is to settle payments in Bitcoin, which will require special knowledge of Bitcoin. The prototype, however, may just involve settling in dollars. The baseline prototype will use all-pay auction, and further extensions can use more complex auction formats. The code must be written in Python 3.X in the Django framework and hosted on Heroku.

## Auction

The baseline prototype of Bit Bid will use an all-pay auction, where each bidder pays their bid regardless of whether they win. The highest bidder wins the auction, but everyone still pays their bid (even those who lose). This requires the seller to choose a date for the auction to close and accept no more bids. At settlement, the auctioneer gathers payments from all bidders and gives the item offline to the highest bidder.

## Authentication

You will need to create logins for sellers and buyers. Use Google authentication for simplicity. A seller and a buyer will have different interfaces, so their logins will lead them to separate views of the website.

## The Auction Block

The Auction Block is a dashboard that lists all items up for sale at any given moment. Each item in the dashboard will have an auction number, a start date, a close date, status of the auction, and a short description of the item. The Auction Block will also specify the current highest bid and the highest bidder’s name for active auctions.

Status

The status of the auction will be either active or closed. If the auction is active, the highest bid is displayed. If the auction is closed, it displays the winner. This dashboard is common across both sellers and buyers.

## Seller interface

The sellers’ interface will show the auction block, which lists all current items for sale. The seller has the ability to create a new auction. Once an auction is created, it cannot be terminated. The seller only has one choice, which is to create a new auction. All payments afterwards will be handled automatically by the system.

To create a new auction, the seller must specify the description of the auction, the horizon, the minimum bid, and the minimum bid increment. A description is 140-character description of the item to be auctioned like, “Antique painting of George Washington from 1776.” The horizon of is a time (in hours) that the auction is active, ranging from a minimum of 1 to a maximum of 72. The minimum bid is the smallest possible starting bid for the auction, such as $10 or $100. The minimum bid increment is the smallest amount from the current bit that the new bid must exceed. For example, if the minimum increment is $5 and the highest prior bid is $50, then the next bid must be at least $55 to be accepted by the system.

## Buyers’ interface

The buyer can bid on any auction in the Auction Block, so he sees the entire Auction Block plus a “Bid” button. He can then submit his bid on that item (e.g., a $25 bid).

After bidding, he can refresh his screen and be listed in the Auction Block if he’s the highest bidder.

## Payments

An important part of authentication will be payments. For now, assume all settlement happens in dollars (future extensions can consider settling in Bitcoin). Assume that the actual settlement happens through third-party applications (like PayPal). For now, the Bit Bid website only tracks the balances. All users, both buyers and sellers, have a balance (account funds) they can view. For now, don’t worry about how to transfer money in or out of this balance. This is just a way of recording the balance. Future extensions can integrate with third-party payment platforms.

When a new buyer creates an account, he has the ability to fund the account through a third-party application. For now, just let him pick a number using a fake balance for testing purposes.

## Settlement

When the auction closes, there are two transfers. First, the seller accrues all bid values in the auction since this is an all-pay auction. Second, the highest bidder accrues the value of the auctioned object. For example, if the seller is auctioning a painting that is valued at $100 and there are three buyers—Buyer A bid $5, Buyer B $10, and Buyer C $20—then Buyer C wins the auction. Every buyer pays their bid, so the seller accrues $35. Buyer C also accrues $100 because he won the auction. The account balances of Buyers A, B, and C are adjusted based off their prior balances.

## Repeat bids

Buyers can bid multiple times on an active auction during its horizon. If so, then the new bid replaces the old bid. The bidder does not have to pay all of these bids, just his highest bid. As an example, suppose Buyer A first bids $10, Buyer B bids $20, then Buyer A bids $30. In this auction, Buyer A’s highest bid ($30) replaces his $10 bid. If Buyer A wins the auction, both will pay their highest bid.

I will leave the specific format and interface display up to you. Just make it look as intuitive and simple as possible. Don’t worry too much on fancy graphics. Just get the information out there.