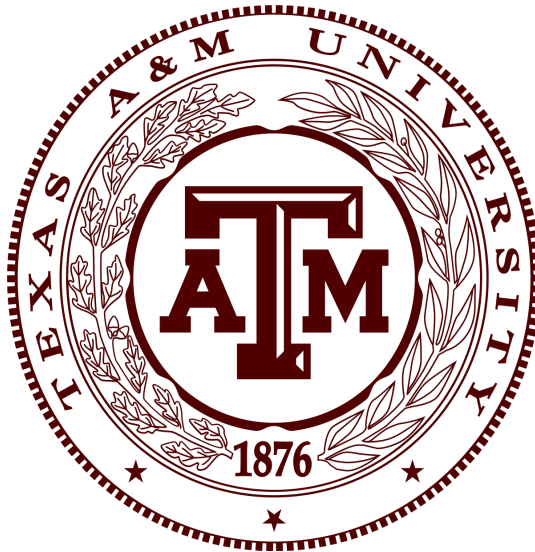# BIDWORK

CSCE 606 : Software Engineering course project

Prof. Duncan M. (Hank) Walker (Fall 2020)

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Summary of BidWork Application

We have developed a BidWork Application. It is a website that allows multiple users to bid for a common shared resource. Imagine an IT support department at a corporation that must serve multiple departments. The website will operate an auction where buyers (of time) can bid on blocks of time of the seller. The auction will be a Dutch auction, where prices start high and fall until the market clears. The website will be implemented at the Mays Business School, where our customer Dr. Jisu Cao, from the Texas Institute of Data Science (TAMIDS) serves multiple faculty.

Organizations of all kinds must share common resources to individuals. For example, corporations employ IT support departments to serve multiple departments. Traditionally, these central resources have been allocated based on priority or on a first come, first serve basis. However, such allocation mechanisms suffer from the public goods problem, in which individual agents acting in a selfish and decentralized way will over-consume the shared resource. A price mechanism can be effective in better allocating this common resource, as it forces individuals to pay for their usage. We implement such a mechanism through a Dutch auction, in which a single seller auctions blocks of time to several buyers. We develop theoretical properties of this auction and provide a design of the actual website, as well as experimental results on the performance of the auction.

We have given admin and buyer access, where they can login using the username and password. The admin can add the week in the seller's page, through the admin page, for which the auction is going to happen. The buyer can bid for the corresponding week, by specifying the number of bid hours.
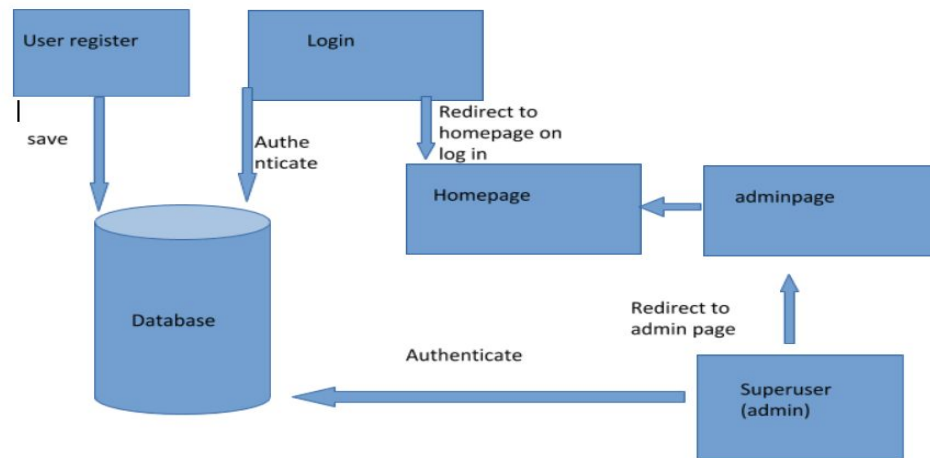
The application has primarily 2 parts:

1. A seller page where the seller can add items
2. A buyer page, where he can add his bid by inputting the number of bid hours and clicking on the bid button.
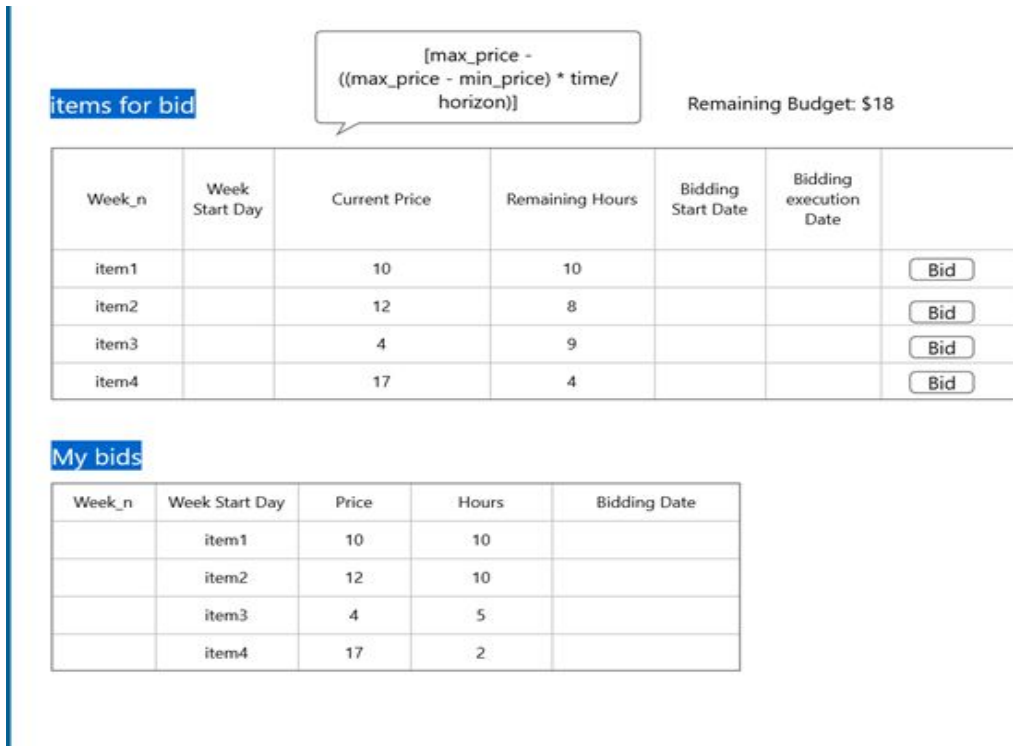
Framework used:

1. Django
2. Github
3. Heroku

DESIGN FLOW

Figure 1: *Design of the login and registration of buyers in bidworks.*

items for sell

Week_n	Week Start Day	Bidding Start Date	Bidding Execution Date	current price	Min price	Max Price	total availibility	remaining availibility	
item1				10	1	2	5	0	Delete
item2				12	3	5	3		Delete
item3				4	4	6	5		Delete
item4				17	1	10	7		Delete

Add new

Item1 Sells

Buyer Name	BidHour	Price	Week	Bidding Date
A	10		10	
B	12		10	
C	4		5	
B	17		2	

Figure 2: *Seller page Design Diagram*

Figure 3: *Buyer page Design Diagram*

USER STORIES

Feature 1: Home page

As an user

I should be able to see the home page when I enter the URL.

Description: The home page is the entry point to access all the main services:
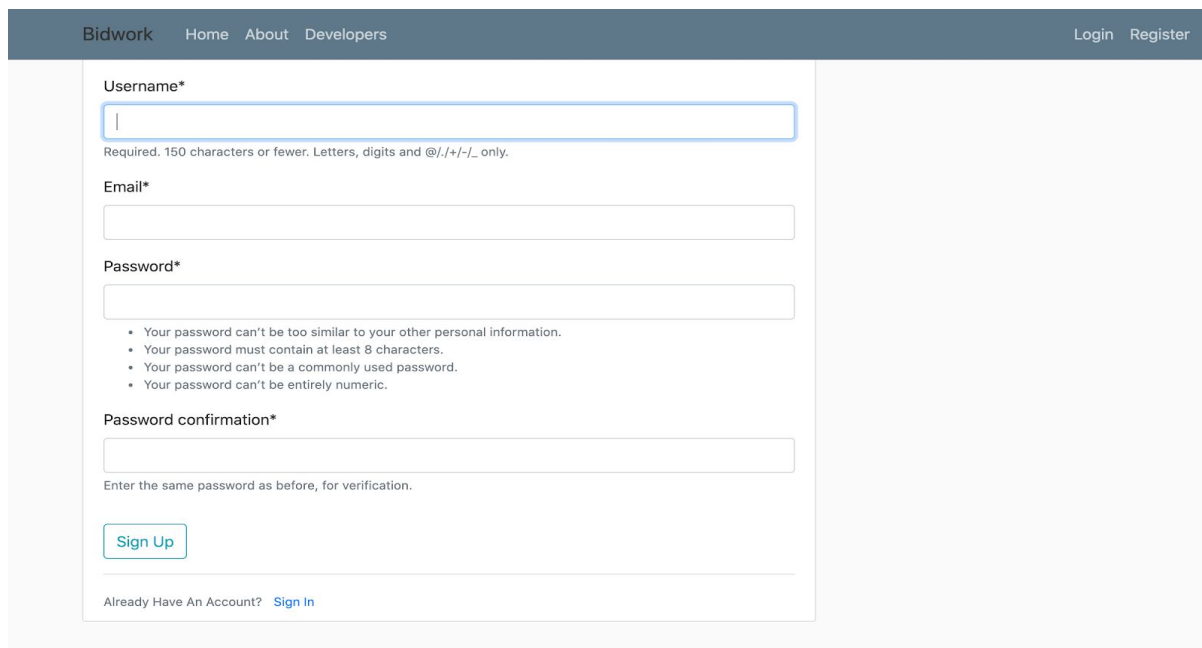
- About
- Register
- Login
- Home
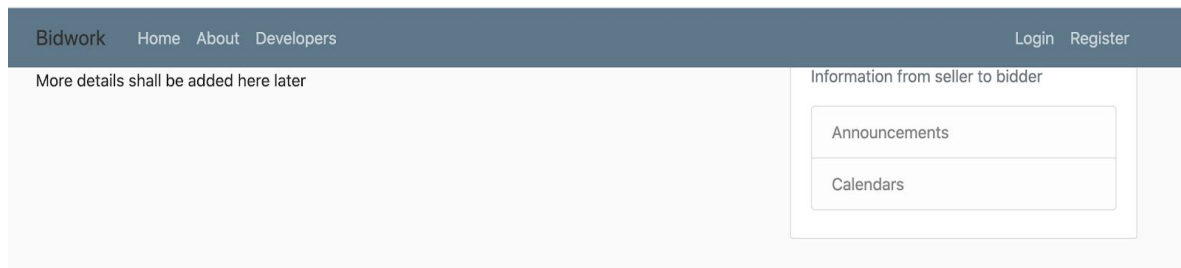
Figure 4: *Home page*

Feature 2: Registration page

As an user,
I want to register using a registration form
So that I would be able to login with a user ID and Passwords

Description: The registration page contains the information such as
 username, email, password and confirm password. It performs basic validations on the entered data which is also displayed on the page, and it throws an error message or registers the users based on the data.

Figure 5 : Registration page

Feature 3: Login page
As an user, if I have registered,
I should be able to login
So that I would be able to access my profile

Description: Every time the user tries to access his profile, he/she is asked to provide his/her username and password . These are entered through a form. If username and password are correct, the user will be logged in, else an error message will be displayed.

The Login functionality is provided separately for buyer and seller. The Forgot password functionality is also added.

Figure 6: *Login page*

Feature 4: Admin Page

As an administrator,
I want to have administrative rights
So that I can have privileges to manage the auction
Description: The admin has a separate login URL. This account is created as a superuser. When we login as an admin, we could view both the seller and the admin pages.

Figure 7: *Admin page*

The admin can only remove the sells or bids and not modify them in any other way. This was done to ensure the safety of the whole bidding and avoiding complications in the bids).

Feature 5: About Page

Displays the information about the client
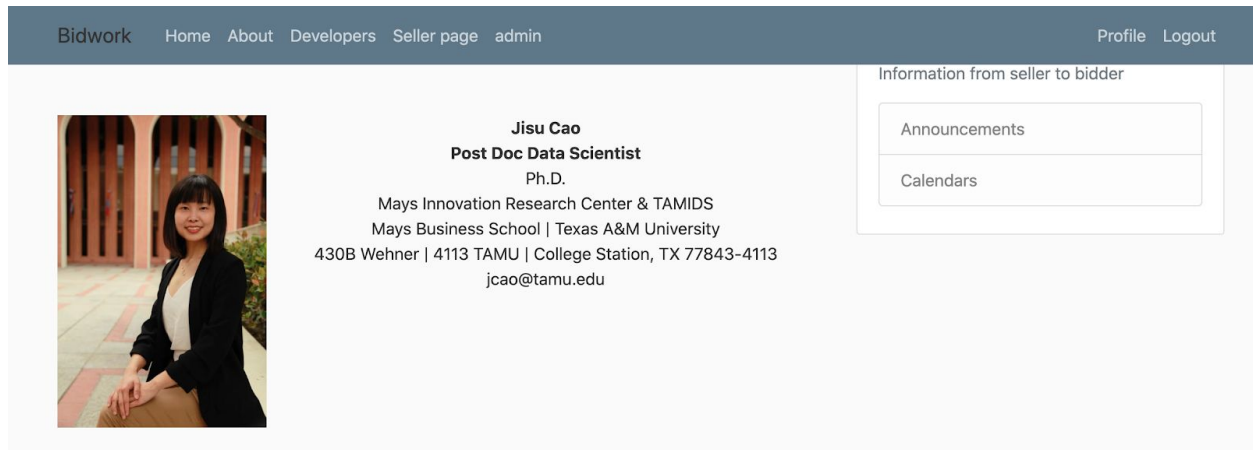
Figure 8: *About page*

Feature 6: Bidding view
As a bidder,
I would like to see the bidding view
So that I will be aware of the Available hours and the current price per hour

Description: The bidding view consists of a table, which includes the week no., the available hours for that week and the current price per hour. This will help the bidders in submitting their bids, where they will specify the number of hours they would like for the week, and the maximum price he/she is willing to pay per hour.

Figure 9: *Buyer page*

After logging in, you should see the schedule of the data analyst (aka seller) followed by your bid history (lower table). For the upper table, each row shows the details of a week where the week number (1st column) and week start date (2nd column) denotes the week starting from a certain date. The 3rd and 4th columns show the bidding start and its end date. Please note that you can only bid during the period of the beginning-end bid date. The next column shows the current price which is a linear function of maximum and minimum price (set by the seller) as well as the elapsed bidding time. The remaining hour for the regarding week is reported next. Finally, the bid hours is the only editable column where you need to enter the hours you need to hire the seller. Such a number should be 1) an integer, 2) smaller than the available, and 3) bigger than zero. After entering the hour, press the "bid" button to place your bid. Shortly, you will get a success/failure notification at the top of the page. The past weeks are shown in the gray background and the table can be sorted ascendingly or descendingly by clicking on the header. For more information, please contact your administrator.

The lower table shows the history of the bids that you have placed. Each row contains the week number, bid price (per hour), bid hours, and the total bid price followed by the time that it has been placed.

Feature 7: Help

As an user,

I want a help button

So that I get tips on how to perform all possible actions on the website

Description: The system must provide certain tips, explaining the main components and functionalities of the website

Feature 8: Seller

As a seller,

I would like to enter the units to be auctioned,

So that the buyers will be able to input their bid

Description: The seller inputs the units to be auctioned on her interface. She should also be able to see the current winning bids on her dashboard.

| Bidwork | Home | About | Developers | Seller page | admin | | Help | Profile | Logout |

My schedule

Week Number	Week Start Date	Bidding Start Date	Bidding End Date	Min Price	Max Price	Current Price	Total Availablity	Remaining availability	Last Modified	
76	2021-06-06	2021-05-23 00:00	2021-05-30 00:00	10.00	50.00	50.00	40	33	2020-11-27 16:04	Update
75	2021-05-30	2021-01-17 00:00	2021-01-24 00:00	10.00	50.00	50.00	40	40	2020-11-24 13:32	Delete Update
57	2021-01-24	2020-12-20 00:00	2020-12-27 00:00	12.20	50.00	50.00	805	803	2020-11-23 23:25	Update
53	2020-12-27	2019-12-15 00:00	2020-12-22 00:00	10.00	1500.00	103.71	80	70	2020-11-23 20:32	Update

Add

Placed Bids

Week Number	Buyer Name	Unit Price	Bid Hour	Total Price	Post Date
76	profile1	50.00	7	350.00	2020-11-28 13:06

Figure 7: Seller page

After logging in, the seller should see the schedule and the placed bids by faculties (aka buyers). Each row shows the details of a week where the week number (1st column) and week start date

(2nd column). The 3rd and 4th columns show the bidding start and its end date. The minimum (5th column) and maximum (6th column) and current price (7th column) are next in the list. The current price is a linear function of maximum and minimum price as well as the elapsed bidding time. The total availability is dictated by the seller and is the total number of hours that you are working in that specific week while the remaining hour shows the left hours (not bidded yet).

To make a new item (week), press the "Add" button and a new record will show up in the table. Subsequently, you need to update the numbers/dates and press the "update" button designed at that row. You only can delete the weeks which are not yet bidded (the weeks with bids do not have the delete button). Also, for the weeks with the present bidding, you shall only update the record by increasing the total availability hour. The editable fields are denoted in blue underlined style. After updating, a notification will be shown at the top of the page with the proper message.

The following validations are in-place for updating/adding an item: 1) the week number shall be unique and not repeated (you can increase the availability number if needed), 2) the maximum price should be bigger or equal to the minimum price, 3) the total availability should be higher than the amount which is already bidded, 4) the total availability should be bigger than 0 and less than 168 hours (full load), 6) the bid end date should be later than the bid start date, 7) the bidding end date should be sooner than the week start date (i.e. if you are updating the week starting in 10th of October, the end date should happen by 9th).

APPLICATION FLOW

Logging in as a buyer:

Seller Schedule

Week Number	Week Start Date	Bidding Start Date	Bidding End Date	Current Price	Remaining availability	Last Modified	Bid Hours	
76	2021-06-06	2021-05-23 00:00	2021-05-30 00:00	50.00	40.0	2020-11-27 16:04	0	Bid
75	2021-05-30	2021-01-17 00:00	2021-01-24 00:00	50.00	40.0	2020-11-24 13:32	0	Bid
57	2021-01-24	2020-12-20 00:00	2020-12-27 00:00	50.00	803.0	2020-11-23 23:25	0	Bid
53	2020-12-27	2019-12-15 00:00	2020-12-22 00:00	103.87	70.0	2020-11-23 20:32	0	Bid

My Bids

Week Number	Unit Price	Bid Hour	Total Price	Post Date
53	122.52	10	1225.20	2020-11-23 20:33

Logging as a seller:

Username*

Password*

Login

Need An Account?   Sign Up Now

Forgot password?   Reset Password Here

Forgot password?   Reset Password Here

Testing:

The testing is done using the behave module in Django and the selenium webdriver. All the user stories have been tested.

BDD test results for the entire project

```
Feature: Admin # features/admin.feature:1

  Scenario: Test Admin Page                        # features/admin.feature:3
    Given an user with administrative rights    # features/steps/admin.py:5 0.115s
    When I submit an admin login request        # features/steps/admin.py:15 0.688s
    Then I should be directed to the Admin page # features/steps/admin.py:24 0.070s
    Given an user without administrative rights # features/steps/admin.py:33 0.101s
    When I submit an admin login request        # features/steps/admin.py:15 0.237s
    Then I should receive an error message      # features/steps/admin.py:43 0.023s

Feature: Buyer # features/buyer.feature:1

  Scenario: Test Buyer Page                                              # features/buyer.feature:3
    Given a logged in buyer on the Buyer Page with the below bids          # features/steps/buyer.py:6 36.954s
      | Week Number | Bid Start Date   | Bid End Date     | Min Price | Max Price | Total Availability |
      | 35          | 2019-12-05 00:00 | 2019-12-10 00:00 | 10.00     | 60.00     | 5                  |
      | 40          | 2020-08-10 00:00 | 2020-08-15 00:00 | 20.00     | 70.00     | 10                 |
      | 45          | 2020-09-15 00:00 | 2020-09-20 00:00 | 30.00     | 80.00     | 15                 |
      | 50          | 2020-10-20 00:00 | 2020-10-25 00:00 | 40.00     | 90.00     | 20                 |
      | 53          | 2020-12-05 00:00 | 2020-12-10 00:00 | 50.00     | 100.00    | 25                 |
    When I enter the number of Bid Hours and select "Bid" button                  # features/steps/buyer.py:78 0.698s
    Then I should see the bid under "My Bids" on the Buyer page                    # features/steps/buyer.py:94 0.097s
    And as a seller I should see the bid under "Placed Bids" on the Seller page # features/steps/buyer.py:103 0.617s

Feature:  # features/help_profile.feature:1

  Scenario: Test Profile and Help Page                              # features/help_profile.feature:3
    Given a logged in user on the homepage                          # features/steps/help_profile.py:5 0.654s
    When I select Help                                              # features/steps/help_profile.py:27 0.080s
    Then I should be directed to the Help page                      # features/steps/help_profile.py:33 0.011s
    And I should see "Faculties Help" and "Data-analyst Help" section # features/steps/help_profile.py:38 0.068s
    When I select Profile                                           # features/steps/help_profile.py:48 0.104s
    Then I should be directed to the Profile page                   # features/steps/help_profile.py:54 0.004s
    And I should see my Username and Email Address                  # features/steps/help_profile.py:59 0.072s

Feature: Home Page # features/home_page.feature:1

  Scenario: Test services of Home Page                # features/home_page.feature:3
    Given a user on homepage                           # features/steps/home_page.py:3 0.094s
    When I select About                                # features/steps/home_page.py:8 0.553s
    Then I should be directed to the About page        # features/steps/home_page.py:14 0.106s
    When I select Register                             # features/steps/home_page.py:22 0.089s
    Then I should be directed to the Register page     # features/steps/home_page.py:29 0.085s
    When I select Login                                # features/steps/home_page.py:36 0.079s
    Then I should be directed to the Login page        # features/steps/home_page.py:43 0.077s
    When I select Developers                           # features/steps/home_page.py:50 0.579s
    Then I should be directed to the Developers page # features/steps/home_page.py:57 0.068s
```

Scrum Iteration Summary

Iteration 0: For this iteration, we listed and defined the user stories that we need to work on, work distribution and worked on the initial setup part for our application.

Iteration 1: For this iteration, we picked 2 user stories, for creating a registration, admin home page, about page and login page for admin and user login.

Iteration 2: For this iteration, we started with building a buyer page for bidders, and a seller page.

Iteration 3: For this iteration, the buyer and seller pages are modified and new functionalities are added to them.The Logout functionality is added.

Iteration 4: For this iteration, the additional functionalities are added to the login page such as Forgot password. The other modifications with respect to the login page are that the buyer and seller page can be accessed directly.

Scrum Master : The scrum master is not the same throughout the project
Product Owner : Ruben Lopez

Pivotal Tracker: https://www.pivotaltracker.com/n/projects/2467299
Github Repo: https://github.com/somidvar/team01.git
Heroku URL: https://enigmatic-mesa-29198.herokuapp.com/
Poster and Demo Presentation: https://www.youtube.com/watch?v=BmS1rivrLG8
Poster: https://tinyurl.com/y5tlyngp

Client : Mays Business School
Customer meeting dates:
10/27/2020,11/17/2020
Tuesday 3PM – 3:30 PM
https://tamu.zoom.us/j/91871112262

In the demo for Iteration 4, the customer requested a help page and we implemented it.