

CS50's Web Programming with Python and JavaScript

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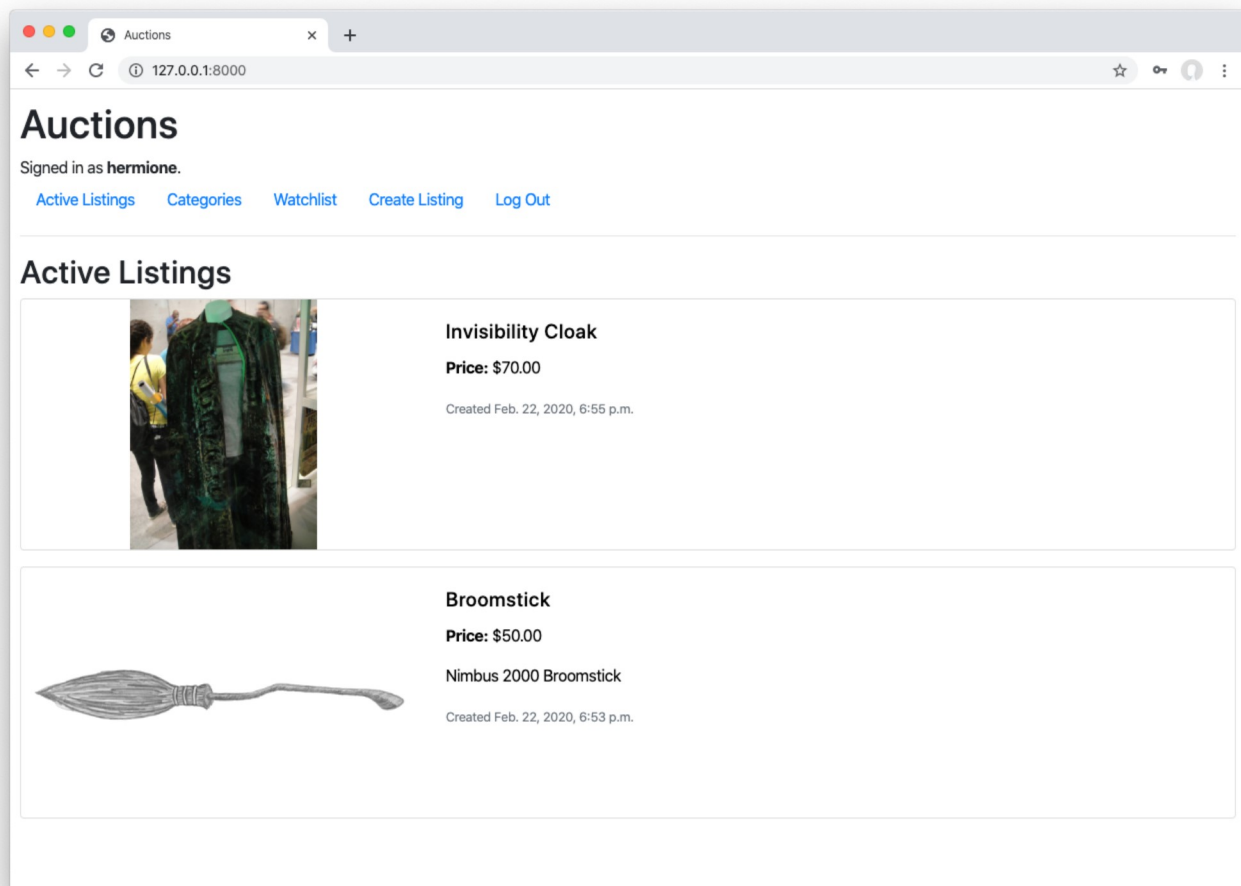
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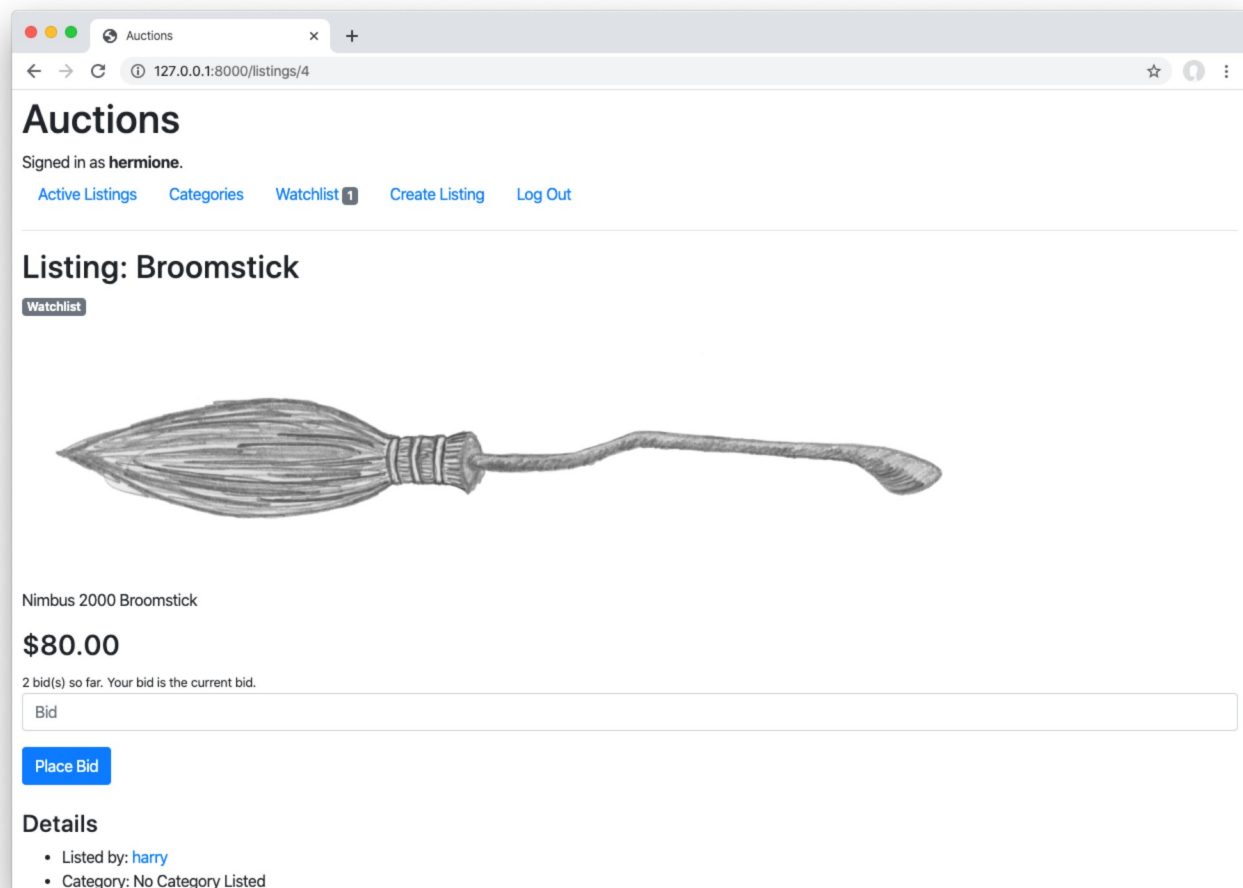
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Commerce

Design an eBay-like e-commerce auction site that will allow users to post auction listings, place bids on listings, comment on those listings, and add listings to a “watchlist.”





Getting Started

1. Download the distribution code from <https://cdn.cs50.net/web/2020/spring/projects/2/commerce.zip> (<https://cdn.cs50.net/web/2020/spring/projects/2/commerce.zip>) and unzip it.
2. In your terminal, `cd` into the `commerce` directory.
3. Run `python manage.py makemigrations auctions` to make migrations for the `auctions` app.
4. Run `python manage.py migrate` to apply migrations to your database.

Understanding

In the distribution code is a Django project called `commerce` that contains a single app called `auctions`.

First, open up `auctions/urls.py`, where the URL configuration for this app is defined. Notice that we've already written a few URLs for you, including a default index route, a `/login` route, a `/logout` route, and a `/register` route.

Take a look at `auctions/views.py` to see the views that are associated with each of these routes. The index view for now returns a mostly-empty `index.html` template. The `login_view` view renders a login form when a user tries to GET the page. When a user submits the form using the POST request method, the user is authenticated, logged in, and redirected to the index page. The `logout_view` view logs the user out and redirects them to the index page. Finally, the `register` route displays a registration form to the user, and creates a new user when the form is submitted. All of this is done for you in the distribution code, so you should be able to run the application now to create some users.

Run `python manage.py runserver` to start up the Django web server, and visit the website in your browser. Click "Register" and register for an account. You should see that you are now "Signed in as" your user account, and the links at the top of the page have changed. How did the HTML change? Take a look at `auctions/templates/auctions/layout.html` for the HTML layout of this application. Notice

that several parts of the template are wrapped in a check for if `user.is_authenticated`, so that different content can be rendered depending on whether the user is signed in or not. You're welcome to change this file if you'd like to add or modify anything in the layout!

Finally, take a look at `auctions/models.py`. This is where you will define any models for your web application, where each model represents some type of data you want to store in your database. We've started you with a `User` model that represents each user of the application. Because it inherits from `AbstractUser`, it will already have fields for a username, email, password, etc., but you're welcome to add new fields to the `User` class if there is additional information about a user that you wish to represent. You will also need to add additional models to this file to represent details about auction listings, bids, comments, and auction categories. Remember that each time you change anything in `auctions/models.py`, you'll need to first run `python manage.py makemigrations` and then `python manage.py migrate` to migrate those changes to your database.

Specification

Complete the implementation of your auction site. You must fulfill the following requirements:

- **Models:** Your application should have at least three models in addition to the `User` model: one for auction listings, one for bids, and one for comments made on auction listings. It's up to you to decide what fields each model should have, and what the types of those fields should be. You may have additional models if you would like.
- **Create Listing:** Users should be able to visit a page to create a new listing. They should be able to specify a title for the listing, a text-based description, and what the starting bid should be. Users should also optionally be able to provide a URL for an image for the listing and/or a category (e.g. Fashion, Toys, Electronics, Home, etc.).
- **Active Listings Page:** The default route of your web application should let users view all of the currently active auction listings. For each active listing, this page should display (at minimum) the title, description, current price, and photo (if one exists for the listing).
- **Listing Page:** Clicking on a listing should take users to a page specific to that listing. On that page, users should be able to view all details about the listing, including the current price for the listing.
 - If the user is signed in, the user should be able to add the item to their "Watchlist." If the item is already on the watchlist, the user should be able to remove it.
 - If the user is signed in, the user should be able to bid on the item. The bid must be at least as large as the starting bid, and must be greater than any other bids that have been placed (if any). If the bid doesn't meet those criteria, the user should be presented with an error.
 - If the user is signed in and is the one who created the listing, the user should have the ability to "close" the auction from this page, which makes the highest bidder the winner of the auction and makes the listing no longer active.
 - If a user is signed in on a closed listing page, and the user has won that auction, the page should say so.
 - Users who are signed in should be able to add comments to the listing page. The listing page should display all comments that have been made on the listing.
- **Watchlist:** Users who are signed in should be able to visit a Watchlist page, which should display all of the listings that a user has added to their watchlist. Clicking on any of those listings should take the user to that listing's page.
- **Categories:** Users should be able to visit a page that displays a list of all listing categories. Clicking on the name of any category should take the user to a page that displays all of the active listings in that category.
- **Django Admin Interface:** Via the Django admin interface, a site administrator should be able to view, add, edit, and delete any listings, comments, and bids made on the site.

Hints

- To create a superuser account that can access Django's admin interface
- See Django's [Model field reference \(https://docs.djangoproject.com/en/3.0/ref/models/fields/\)](https://docs.djangoproject.com/en/3.0/ref/models/fields/) for possible field types for your Django model.
- You'll likely need to create some [Django forms \(https://docs.djangoproject.com/en/3.0/topics/forms/\)](https://docs.djangoproject.com/en/3.0/topics/forms/) for various parts of this web application.
- Adding the `@login_required` decorator (<https://docs.djangoproject.com/en/3.0/topics/auth/default/#the-login-required-decorator>) on top of any view will ensure that only a user who is logged in can access that view.

- You're welcome to modify the CSS as much as you'd like, to make the website your own! Some sample screenshots are shown at the top of this page. These are meant only to be examples: your application need not be aesthetically the same as the screenshots here (you're encouraged to be creative!).

How to Submit

Hold on! If you have already submitted and received a passing grade on the **prior version of Project 1** (<https://docs.cs50.net/web/2020/x/projects/1/project1.html>) (Books), please stop here. You already have received an equivalence credit for this project, and you should not submit this assignment, as it will have no impact on your progress in the course and will therefore only slow our graders down!

- Visit [this link \(https://submit.cs50.io/invites/89679428401548238ceb022f141b9947\)](https://submit.cs50.io/invites/89679428401548238ceb022f141b9947), log in with your GitHub account, and click **Authorize cs50**. Then, check the box indicating that you'd like to grant course staff access to your submissions, and click **Join course**.
- [Install Git \(https://git-scm.com/downloads\)](https://git-scm.com/downloads) and, optionally, [install submit50 \(https://cs50.readthedocs.io/submit50/\)](https://cs50.readthedocs.io/submit50/).

When you submit your project, the contents of your `web50/projects/2020/x/commerce` branch should match the file structure of the unzipped distribution code as originally received. That is to say, your files should not be nested inside of any other directories of your own creation. Your branch should also not contain any code from any other projects, only this one. Failure to adhere to this file structure will likely result in your submission being rejected.

By way of example, for this project that means that if the grading staff visits <https://github.com/me50/USERNAME/tree/web50/projects/2020/x/commerce> (where `USERNAME` is your own GitHub username as provided in the form, below) we should see the two subdirectories (`auctions`, `commerce`) and the `manage.py` file. If that's not how your code is organized when you check, reorganize your repository needed to match this paradigm.

- If you've installed `submit50`, execute

```
submit50 web50/projects/2020/x/commerce
```

Otherwise, using Git, push your work to <https://github.com/me50/USERNAME.git>, where `USERNAME` is your GitHub username, on a branch called `web50/projects/2020/x/commerce`.

- [Record a screencast \(https://www.howtogeek.com/205742/how-to-record-your-windows-mac-linux-android-or-ios-screen/\)](https://www.howtogeek.com/205742/how-to-record-your-windows-mac-linux-android-or-ios-screen/) not to exceed 5 minutes in length, in which you demonstrate your project's functionality. Be certain that every element of the specification, above, is demonstrated in your video. There's no need to show your code in this video, just your application in action; we'll review your code on GitHub. [Upload that video to YouTube \(https://www.youtube.com/upload\)](https://www.youtube.com/upload) (as unlisted or public, but not private) or somewhere else. In your video's description, you must timestamp where your video demonstrates each of the seven (7) elements of the specification. **This is not optional**, videos without timestamps in their description will be automatically rejected.
- Submit [this form \(https://forms.cs50.io/0daf7cff-2a1f-4485-bb0f-ef10b851c392\)](https://forms.cs50.io/0daf7cff-2a1f-4485-bb0f-ef10b851c392).

You can then go to <https://cs50.me/cs50w> (<https://cs50.me/cs50w>) to view your current progress!

IMPORTANT note regarding your gradebook at `<cs50.me/cs50w>`! Soon after the start of each calendar year (we estimate during the week of 11 January 2021), we typically refresh all of our gradebooks. *All of your work from 2020 will be saved and will carry forward*, but your gradebook may appear temporarily empty or unavailable until you have submitted work in 2021 that has been graded and returned to you by CS50 Bot. So don't be alarmed!

If you finish CS50W during the final days of December 2020, it is very important that you claim your free CS50 Certificate before this gradebook reset takes place, so don't delay! (Verified certificates are unaffected by this.)