CS2102: DATABASE SYSTEMS

Project

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1.0 Server

We use WAPP (Windows, Apache, PHP, Postgres) Stack for our project.

Web server: Apache
Server Page language: PHP, Javascript
Database management: Postgres

2.0 ER Diagram

Figure 1 below shows the ER Diagram for our project.

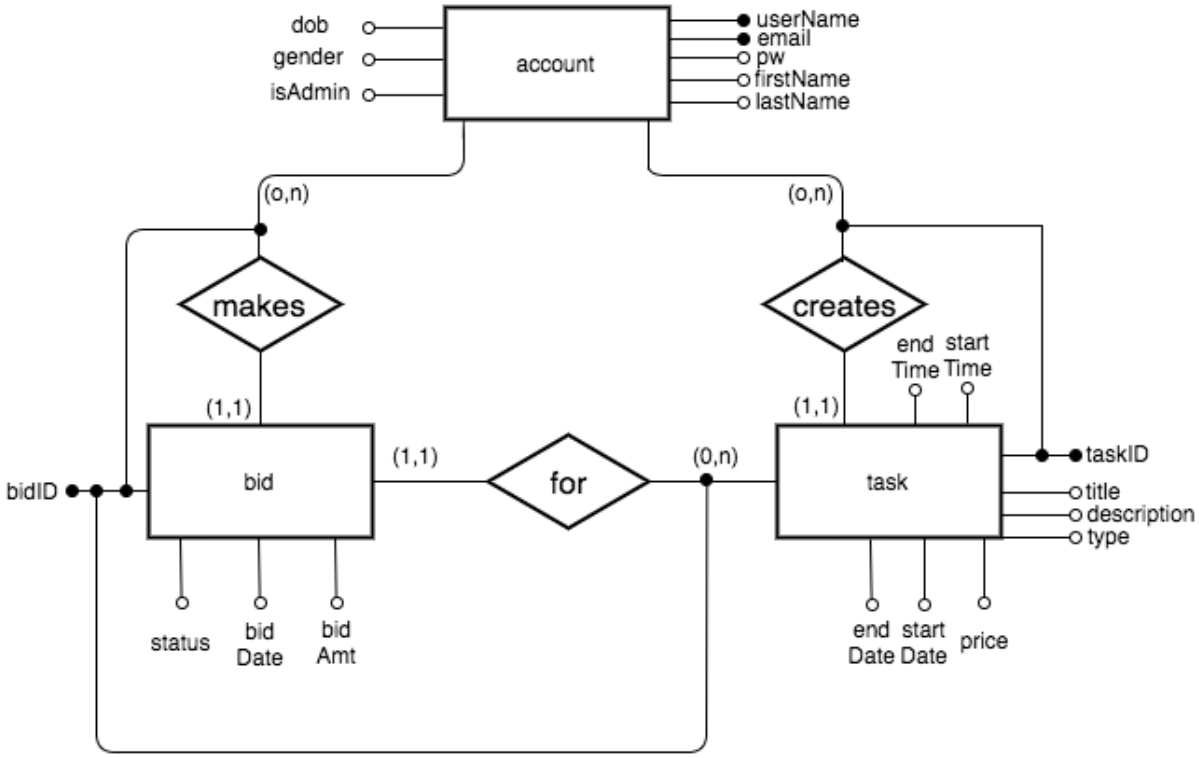


Figure 1: ER Diagram of our Project

3.0 Project

3.1 Relational Schema

3.1.1 Account Table

```
CREATE TABLE account(
      userName VARCHAR(64) PRIMARY KEY,
      email VARCHAR(128) UNIQUE,
      pw VARCHAR(255) NOT NULL,
      firstName VARCHAR(128) NOT NULL,
      lastName VARCHAR(32) NOT NULL,
      dob DATE NOT NULL CHECK (dob < (current_date - interval '18'
year)),
      gender VARCHAR(6) NOT NULL CHECK (gender = 'Male' OR gender =
'Female'),
      isAdmin boolean NOT NULL
);
```

3.1.2 Task Table

```
CREATE TABLE task(
      taskID SERIAL,
      userName VARCHAR(64) REFERENCES account(username) ON DELETE
CASCADE,
      title VARCHAR(255) NOT NULL,
      description VARCHAR(512) NOT NULL,
      type VARCHAR(64) NOT NULL,
      price NUMERIC NOT NULL,
      startDate DATE NOT NULL CHECK (startDate >= current_date),
      startTime TIME NOT NULL,
      endDate DATE NOT NULL CHECK (endDate >= startdate),
      endTime TIME NOT NULL,
      PRIMARY KEY (taskID, username)
);
```

3.1.3 Bid Table

```
CREATE TABLE bid(
      bidID SERIAL NOT NULL,
      taskID INTEGER NOT NULL,
      bidder VARCHAR(64) NOT NULL CHECK (bidder <> taskOwner)
REFERENCES account(userName) ON DELETE CASCADE,
      taskOwner VARCHAR(64) NOT NULL REFERENCES account(userName) ON
DELETE CASCADE,
      status varchar(8) NOT NULL CHECK (status = 'Pending' OR status =
'Accepted' OR status = 'Rejected'),
      bidDate DATE NOT NULL CHECK (bidDate <= current_date),
      bidAmt NUMERIC NOT NULL,
      PRIMARY KEY (bidID,taskID,bidder),
      FOREIGN KEY (taskID,taskOwner) REFERENCES task(taskID,userName)
ON DELETE CASCADE
);
```

3.2 Sample Features

3.2.1 Users whose task have the highest amount of bid in a particular category

```
SELECT t1.username FROM bid b1, task t1
WHERE t1.taskid = b1.taskid AND t1.username = b1.taskowner
AND t1.type = 'Miscellaneous'
GROUP BY t1.taskid, t1.username
HAVING COUNT (*) >= ALL (SELECT COUNT (*) FROM bid b2, task t2
WHERE t2.taskid = b2.taskid
AND t2.username = b2.taskowner
AND t2.type = 'Miscellaneous' GROUP BY t2.taskid);

Description: Retrieves the user with the highest number of bids for a
particular category.
```

3.2.2 Pagination

```
$result = pg_query($db, "SELECT * FROM task LIMIT 10 OFFSET $page1;");

Description: Divides the content of each page equally to a max of 10
per page
```

3.2.3 Stored procedure for adding user

```
CREATE FUNCTION add_user(userName VARCHAR(64), email VARCHAR(128), pw
VARCHAR(255),  firstName VARCHAR(128), lastName VARCHAR(32), dob DATE,
gender VARCHAR(6), isAdmin boolean)
    RETURNS void AS $$
    BEGIN
      INSERT INTO account VALUES
(username,email,pw,firstName,lastName,dob,gender,isAdmin);
    END;
    $$ LANGUAGE plpgsql;

Description: Adding new users to the account table in the database
```

3.2.4 Stored procedure for dashboard completed task statistics

```
CREATE OR REPLACE FUNCTION dashboard_completed_task(userid VARCHAR(64))
      RETURNS TABLE (taskid INT, username VARCHAR(64), title
VARCHAR(255), description VARCHAR(512), type VARCHAR(64), price
NUMERIC, startdate DATE, starttime TIME, enddate DATE, endtime TIME)
AS $$
      BEGIN
         RETURN Query (
            SELECT t.taskid, t.username, t.title, t.description, t.type,
            t.price, t.startdate, t.starttime, t.enddate, t.endtime
            FROM task t, bid b
            WHERE t.enddate < date_trunc('day', CURRENT_TIMESTAMP)
            AND t.taskid = b.taskid
            AND t.username = b.taskowner
            AND t.username = userid
            AND b.taskOwner = userid
```

```
            AND b.status = 'Accepted'
        );
    END
    $$ LANGUAGE plpgsql;
```

Description: Using stored function to retrieve the total number of task completed by a user.

3.2.5 Update bid status trigger

```
CREATE TRIGGER updateOtherBids
AFTER UPDATE
ON bid
FOR EACH ROW
EXECUTE PROCEDURE updateBidStatus();
```

Description: Using trigger function to update the other bid status upon a change in a specific bid status. To ensure that the integrity of the bids correspond to each other. E.g. Accepting one bid causes the other bids to be rejected.

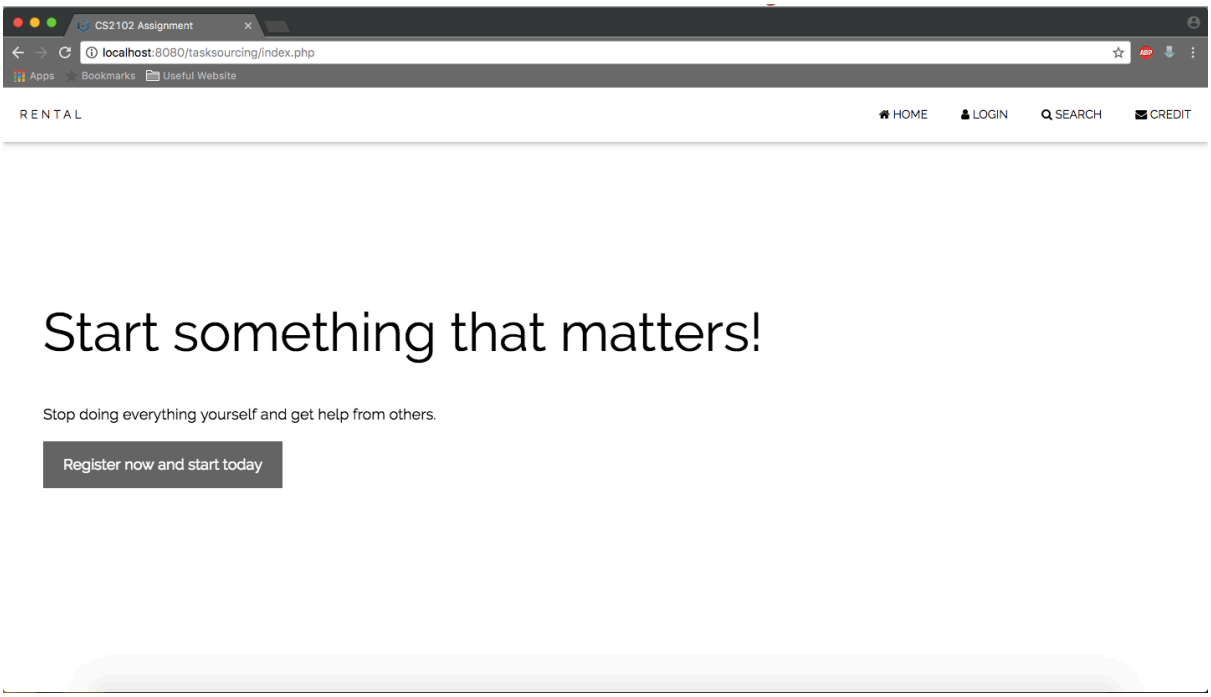
3.2.6 Popular views

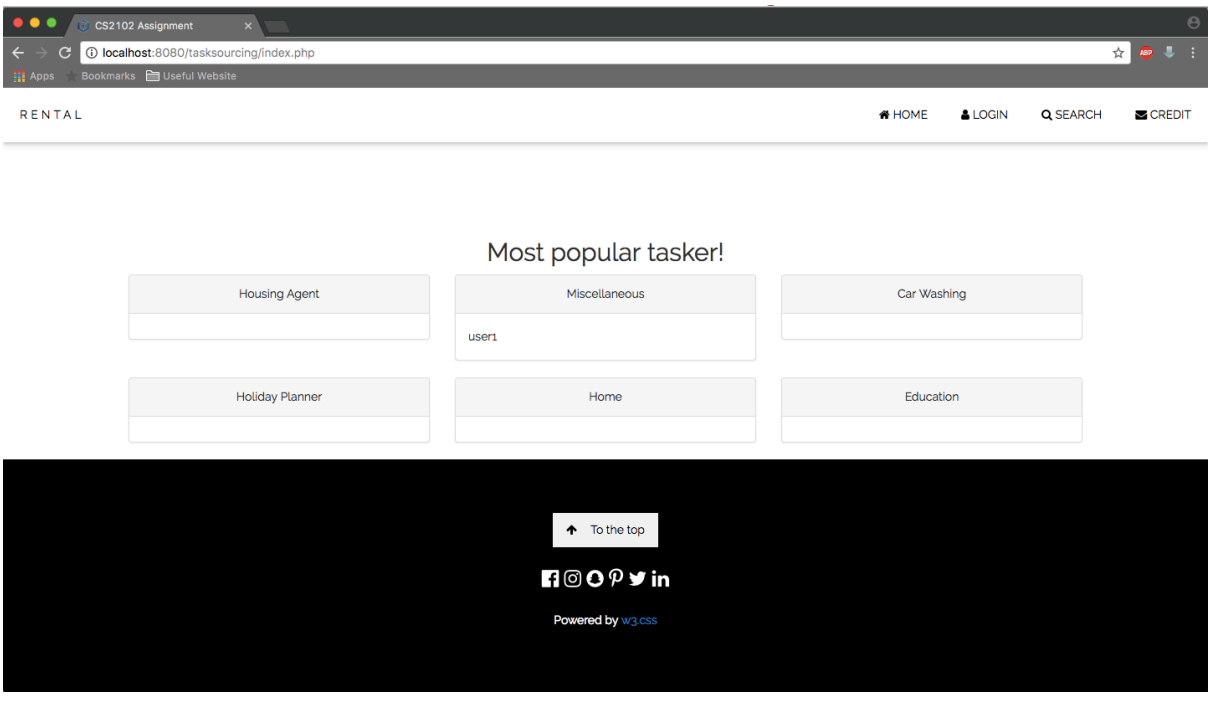
```
CREATE OR REPLACE VIEW popular_housing_agent AS
SELECT t.username FROM bid b, task t
WHERE t.taskid = b.taskid
AND t.username = b.taskowner
AND t.type = 'Housing Agent'
GROUP BY t.taskid, t.username HAVING COUNT (*) >= ALL
(SELECT COUNT (*) FROM bid b2, task t2
      WHERE t2.taskid = b2.taskid
      AND t2.username = b2.taskowner
      AND t2.type = 'Housing Agent' GROUP BY t2.taskid);
```

Description: Retrieves user with the highest number of task created for a category.

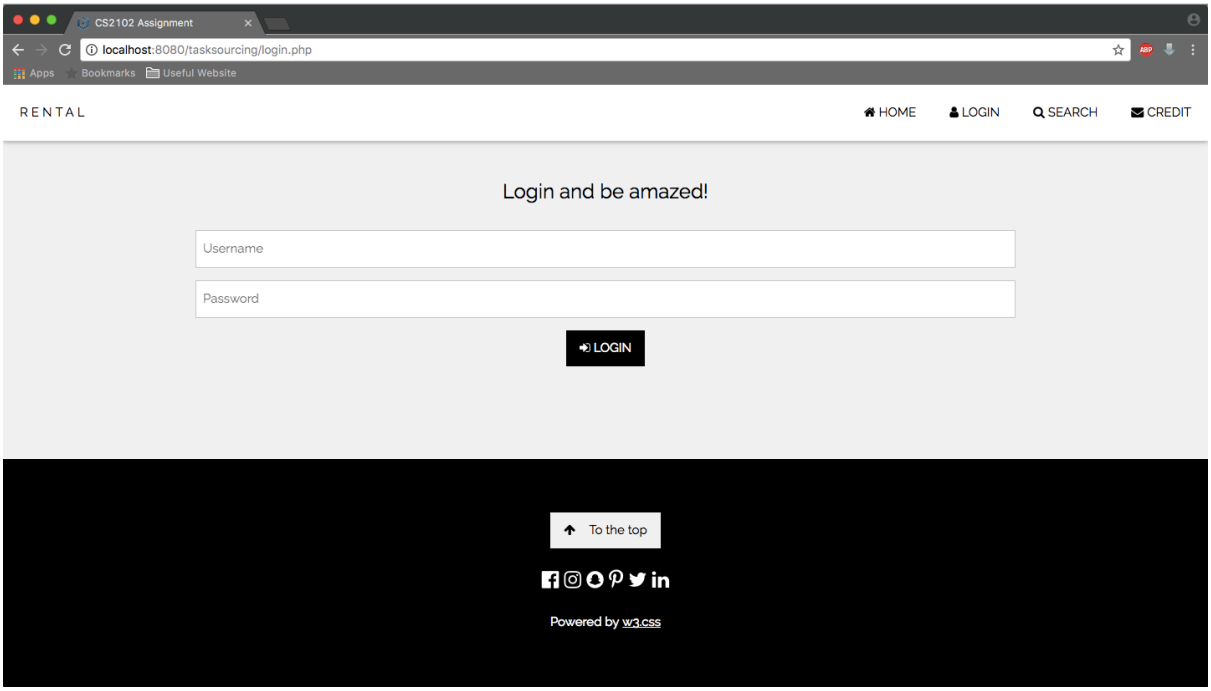
4.0 Images

4.1 Landing Page

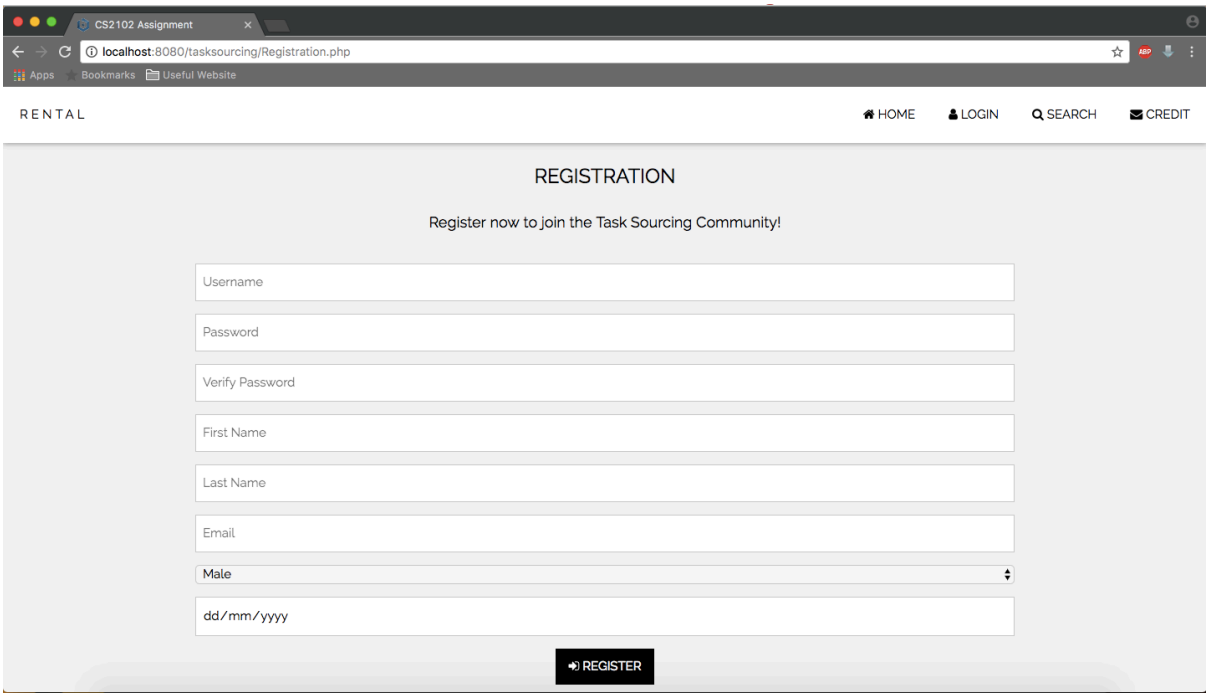




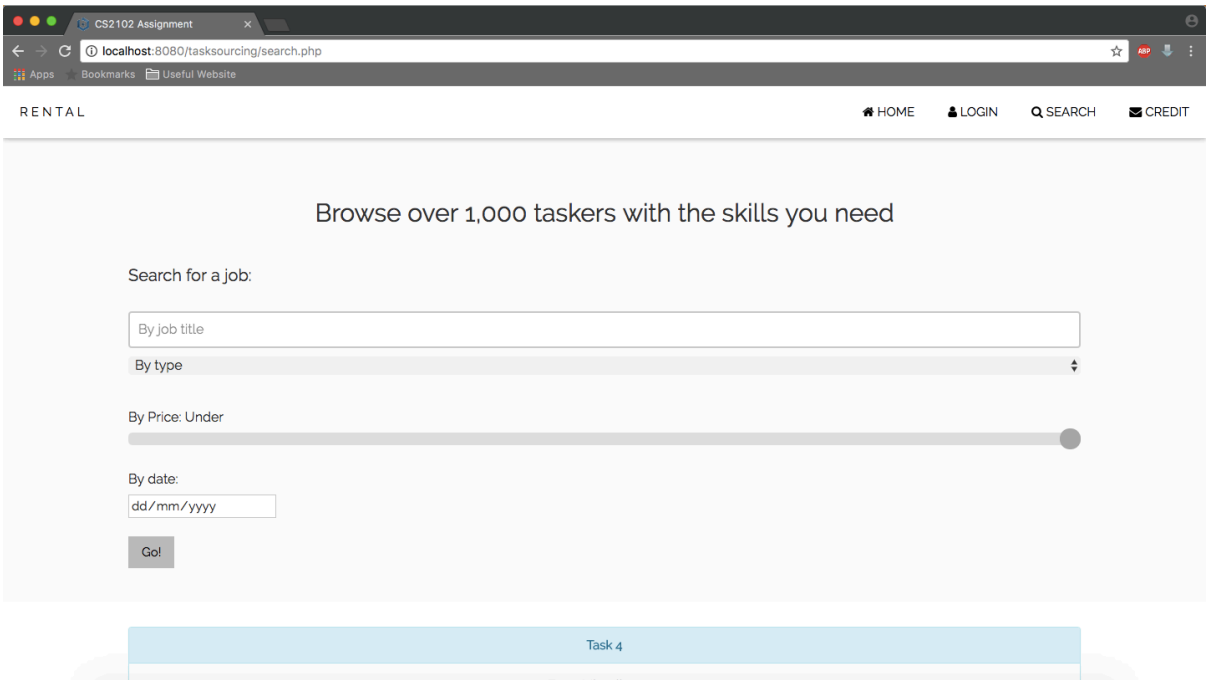
4.2 Login Page



4.3 Registration Page

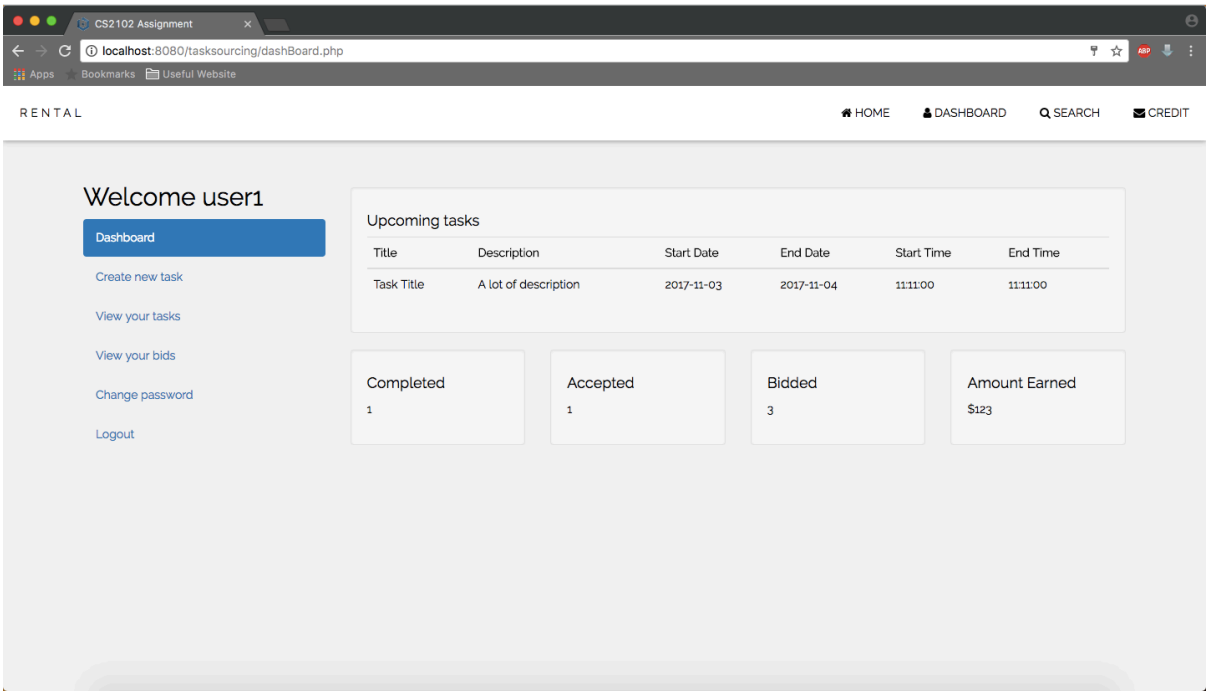


4.4 Search Page

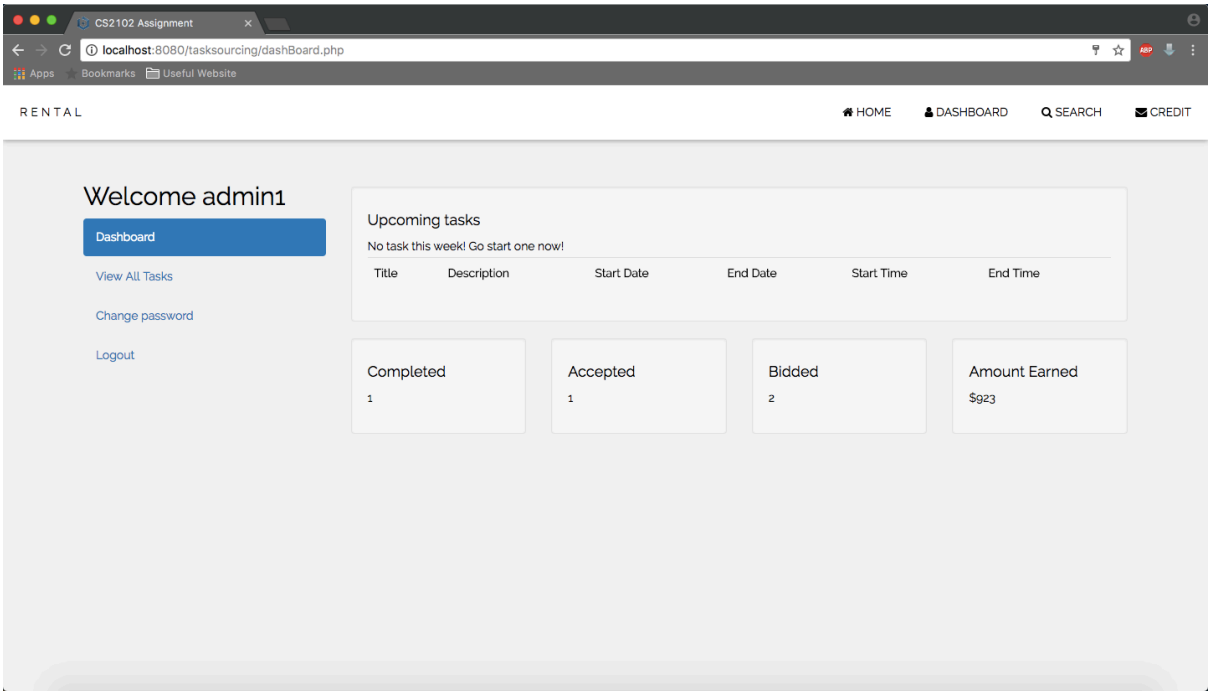


4.5 Dashboard

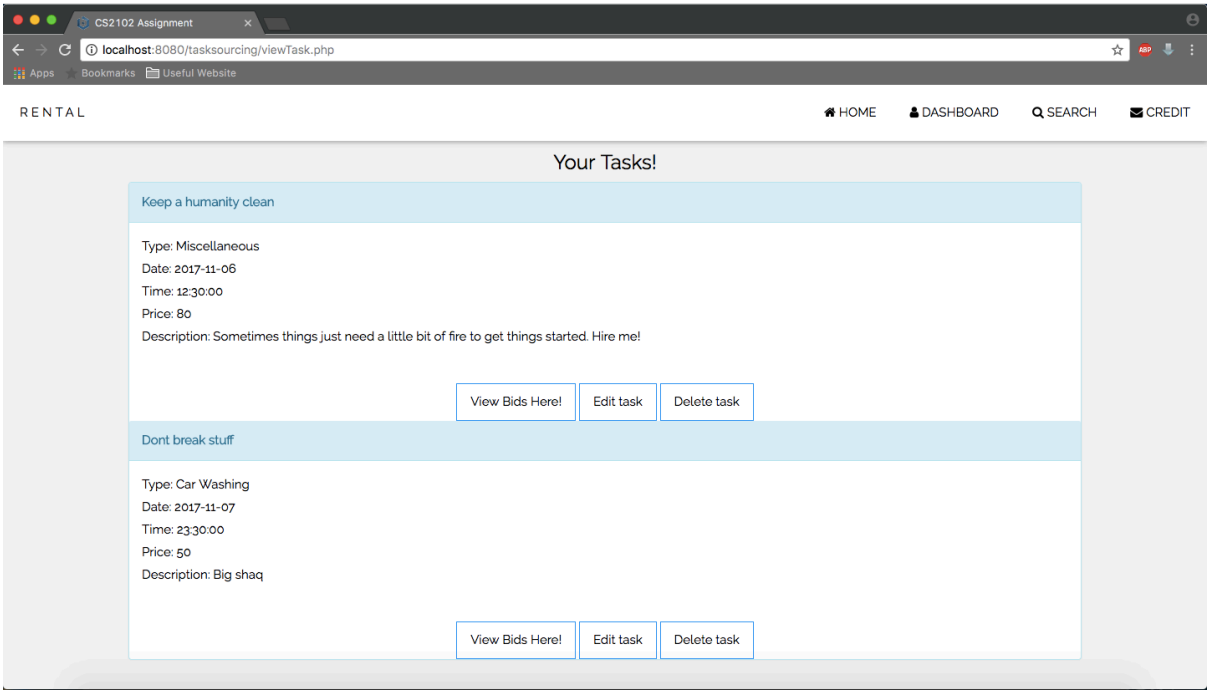
4.5.1 User Dashboard



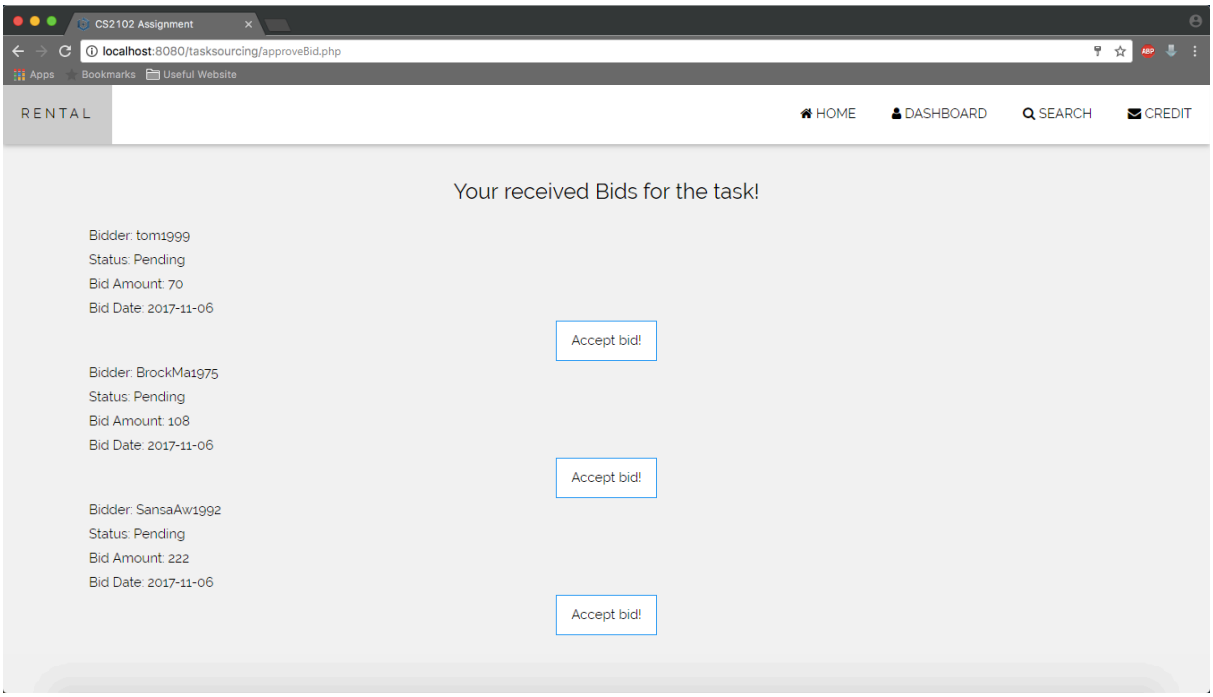
4.5.2 Admin Dashboard



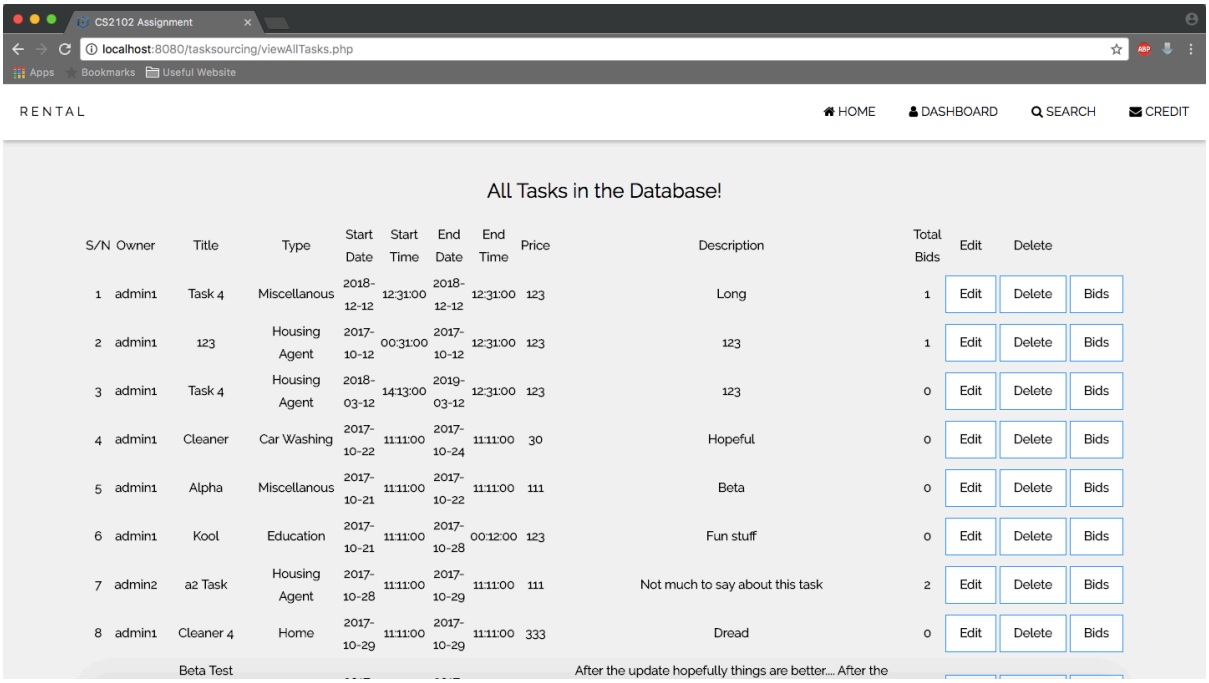
4.6 User View All Tasks



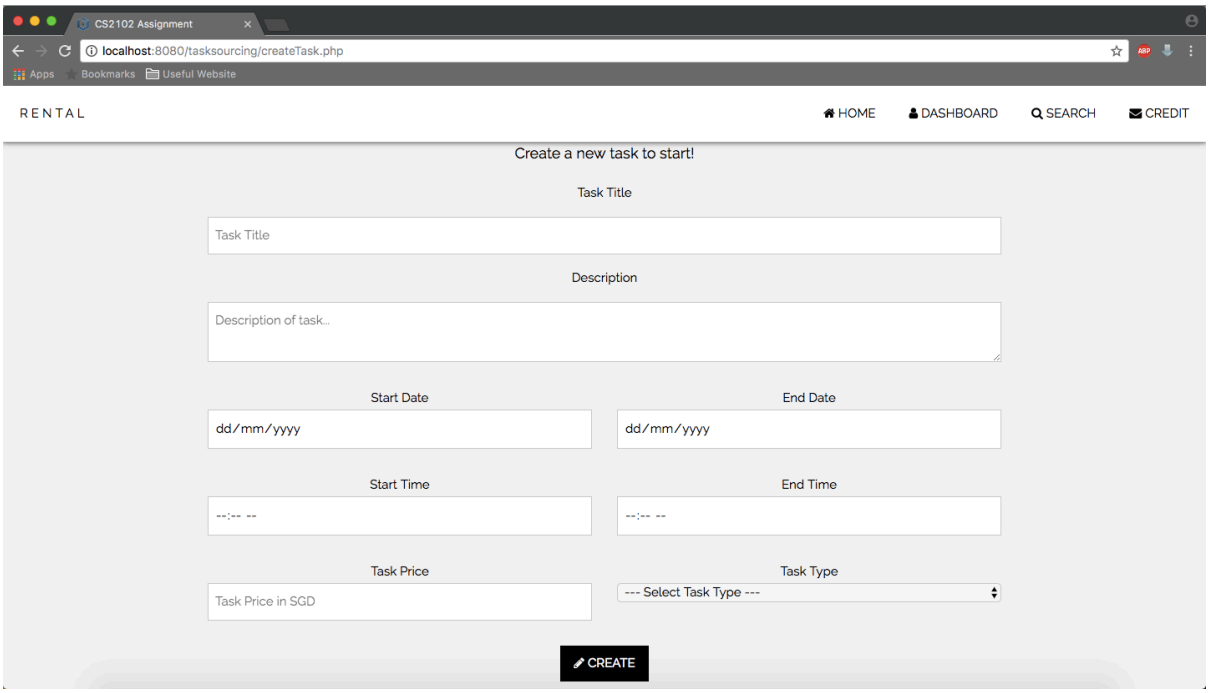
4.7 User View All Bids (for a task)



4.8 Admin View All Tasks



4.9 Create Task



4.10 Create Bid