

Blockchain Environment Setup

- This blockchain database contains a model to store and issue usernames and accounts for various IT systems to allow tracking and usage of IT systems at a detailed level:
 - Participants - Users in the class each semester
 - Assets – Usernames used in the class each semester
 - Transaction – SetUsername to apply a username to a specific individual in the class
 - systemName
 - enumerated datatype to take the following inputs only:
 - BCHAINBOX
 - IBMZ13
 - MYSQL
 - SAPHANA
 - **Participant** that has a unique ID and a relationship to a specific User.

Web finalexam-samplenetwork

Define

Test

admin

PARTICIPANTS

Admin

User

ASSETS

UsernameAsset

TRANSACTIONS

All Transactions

Submit Transaction

Date, Time	Entry Type	Participant	
2018-12-07, 01:00:43	SetUsername	admin (NetworkAdmin)	view record
2018-12-07, 00:55:45	AddParticipant	admin (NetworkAdmin)	view record
2018-12-07, 00:54:55	UpdateAsset	admin (NetworkAdmin)	view record
2018-12-07, 00:54:25	AddAsset	admin (NetworkAdmin)	view record
2018-12-07, 00:52:36	AddParticipant	admin (NetworkAdmin)	view record
2018-12-07, 00:34:28	ActivateCurrentIdentity	none	view record
2018-12-07, 00:34:22	StartBusinessNetwork	none	view record
2018-12-07, 00:34:22	Issuelidentity	none	view record

Web Development

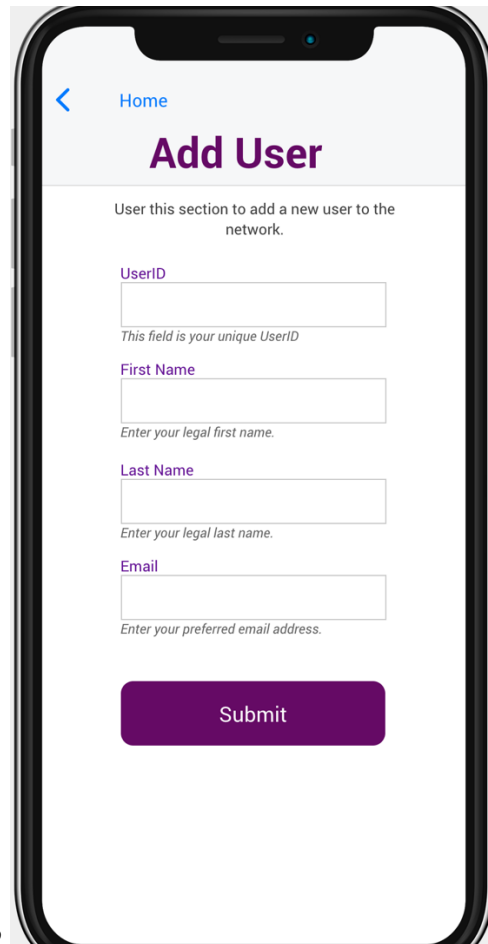
- **Wireframing**

- Sketched out (using a simple medium fidelity mockup) two separate web pages in the format of a mobile application.
- On the first page:
 - A way to read out from the blockchain database and display ALL of the usernames that have been allocated within the blockchain database.
- On the second page:
 - Provides a way for the user to add a new user participant to the blockchain network which can be later assigned a username by the administrator.

Mockups



Screen 1



Screen 2

HTML Documents

usernameList.html

```
1 <html>
2   <meta name="viewport" content="width=device-width, initial-scale=1">
3   <style>
4     /*hold for now */
5   </style>
6   <title>Username List</title>
7   <link rel="stylesheet" href="https://code.jquery.com/ui/1.12.1/themes/base/jquery-ui.css">
8   <script src="https://code.jquery.com/jquery-1.12.4.js"></script>
9   <script src="https://code.jquery.com/ui/1.12.1/jquery-ui.js"></script>
10  <body>
11    <h1>Users System</h1>
12    <table>
13      <tr>
14        <th>#</th>
15        <th>User</th>
16        <th>System</th>
17      </tr>
18      <tr>
19        <td></td>
20        <td>ygranill</td>
21        <td>BCHAINBOX</td>
22      </tr>
23      <tr>
24        <td></td>
25        <td>test001</td>
26        <td>IBZ13</td>
27      </tr>
28    </table>
29  </body>
30 </html>
31
32 |
```

usernameInput.html

```

1  <html>
2    <meta name="viewport" content="width=device-width, initial-scale=1">
3    <style>
4      /*Hold for now */
5    </style>
6    <title>Username Input</title>
7    <link rel="stylesheet" href="https://code.jquery.com/ui/1.12.1/themes/base/jquery-ui.css">
8    <script src="https://code.jquery.com/jquery-1.12.4.js"></script>
9    <script src="https://code.jquery.com/ui/1.12.1/jquery-ui.js"></script>
10  <body>
11    <h1>Add User</h1>
12    <!-- The div that will get updated with results -->
13    <div id='userDiv'></div>
14
15    <!-- This form will contain all of the input boxes and submit button required to add a new user -->
16    <form>
17      <!-- make sure each input has a unique ID to reference -->
18      <p>Use this section to add a new user to the system. </p></br>
19      <h3>User ID:</h3>    <input id="userId" type="text">
20        <p>This field is your unique UserID</p>
21        <br><br>
22      <h3>First Name:</h3>    <input id="firstName" type="text">
23        <p>Enter your legal first name.</p>
24        <br><br>
25      <h3>Last Name:</h3>    <input id="lastName" type="text">
26        <p>Enter your legal last name.</p>
27        <br><br>
28      <h3>Email:</h3>    <input id="email" type="text">
29        <p>Enter your preferred email address.</p>
30        <br><br>
31        <!-- Cool button made by Yaisah-->
32        <a href="#" class="button" id='submit'>Submit</a>
33    </form>
34  </body>
35 </html>
36

```

CSS Formatting

usernameList.html

```

usernameList.html — Edited
usernameList.html > No Selection

1 <html>
2 <meta name="viewport" content="width=device-width, initial-scale=1">
3 <style>
4     .mystyle {
5         color: #bc5a45;
6     }
7     body {
8         background-color: #f4e1d2;
9     }
10    h1 {
11        color: #bc5a45;
12    }
13    h2 {
14        color: #f18973;
15    }
16    p {
17        font-family: arial;
18        font-size: 110%;
19    }
20    table {
21        border-collapse: collapse;
22        width: 100%;
23        height: 200px;
24    }
25
26    th {
27        color: #bc5a45;;
28    }
29    td, th {
30        border: 1px solid #bc5a45;
31        text-align: left;
32        padding: 8px;
33    }
34
35    tr:nth-child(even) {
36        background-color: #f18973;
37    }
38 </style>
39 <title>Username List</title>
40 <link rel="stylesheet" href="https://code.jquery.com/ui/1.12.1/themes/base/jquery-ui.css">
41 <script src="https://code.jquery.com/jquery-1.12.4.js"></script>
42 <script src="https://code.jquery.com/ui/1.12.1/jquery-ui.js"></script>
43 <body>
44 <h1>Users System</h1>
45 <table class = "number" border="1">
46 <tr>
47 <th>#</th>
48 <th>User</th>
49 <th>System</th>
50 </tr>
51 <tr>
52 <td></td>
53 <td>ygranill</td>
54 <td>BCHAINBOX</td>
55 </tr>
56 <tr>
57 <td></td>
58 <td>test001</td>
59 <td>IBZ13</td>
60 </tr>
61 </table>
62 <script>
63     var addNumeration = function(c1){
64         var table = document.querySelector('table.' + c1)
65         var trs = table.querySelectorAll('tr')
66         var counter = 1
67
68         Array.prototype.forEach.call(trs, function(x,i){
69             var firstChild = x.children[0]
70             if (firstChild.tagName === 'TD') {
71                 var cell = document.createElement('td')
72                 cell.textContent = counter ++
73                 x.insertBefore(cell,firstChild)
74             } else {
75                 firstChild.setAttribute('colspan',2)
76             }
77         })
78     }
79
80     addNumeration("number");
81 </script>
82 </body>
83 </html>
84

```

usernameInput.html

```

1  <html>
2  <meta name="viewport" content="width=device-width, initial-scale=1">
3  <style>
4      .mystyle {
5          color: #bc5a45;
6      }
7  body {
8      background-color: #f4e1d2;
9  }
10 h1 {
11     color: #bc5a45;
12 }
13 h2 {
14     color: #f18973;
15     font-size: 16px;
16 }
17
18 h3 {
19     color: #bc5a45;
20     line-height: 5px;
21     font-weight: normal;
22 }
23 p {
24     color: #b2b2b2;
25     font-style: italic;
26     font-family: arial;
27     font-size: 9px;
28 }
29
30 .button {
31     background-color: #bc5a45;
32     border: none;
33     color: white;
34     padding: 15px 32px;
35     text-align: center;
36     text-decoration: none;
37     display: inline-block;
38     font-size: 16px;
39     margin: 4px 2px;
40     cursor: pointer;
41 }
42 </style>
43 <title>Username Input</title>
44 <link rel="stylesheet" href="https://code.jquery.com/ui/1.12.1/themes/base/jquery-ui.css">
45 <script src="https://code.jquery.com/jquery-1.12.4.js"></script>
46 <script src="https://code.jquery.com/ui/1.12.1/jquery-ui.js"></script>
47 <body>
48     <h1>Add User</h1>
49     <!-- The div that will get updated with results -->
50     <div id='userDiv'></div>
51
52     <!-- This form will contain all of the input boxes and submit button required to add a new user participant to the page-->
53     <form>
54         <h2>Use this section to add a new user to the system. </h2></br>
55         <h3>User ID:</h3>    <input id="userId" type="text">
56         <p>This field is your unique UserID</p>
57         <h3>First Name:</h3>    <input id="firstName" type="text">
58         <p>Enter your legal first name.</p>
59         <h3>Last Name:</h3>    <input id="lastName" type="text">
60         <p>Enter your legal last name.</p>
61         <h3>Email:</h3>    <input id="email" type="text">
62         <p>Enter your preferred email address.</p>
63         <br><br>
64         <!-- Cool button made by Yaisah-->
65         <a href="#" class="button" id='submit'>Submit</a>
66     </form>
67 </body>
68 </html>
69

```

Blockchain Integration

Blockchain REST API Get Integration

- Modify the html document to read from the live, deployed blockchain and output the username asset to the ordered list object in your webpage.
- Utilize the jQuery and JavaScript examples to write the syntax needed to read from the live REST API. Each **username** should be listed out as an item in the ordered list.
- In the jQuery/JavaScript script block of this page, output the entire contents of the **results** (i.e. the username assets) that are returned from the REST API (i.e. the raw JSON) to the console to allow for debugging.

The screenshot shows a web browser with the 'Users System' page. The page displays a list of users: 0. PCronan, 1. mlacity, and 2. zsteelma. The developer console is open, showing the REST API GET requests and the resulting JSON data for each user. The console messages are as follows:

```

(3) [(-), (-), (-)]
Yaisah's Record!
username: PCronan
systemname: BCHAINBOX
shortOwner: pcronan
Getting User Info: pcronan
Endpoint Address: http://148.100.4.122:3000/api/org.acme.sample.Userpcronan
Yaisah's Record!
username: mlacity
systemname: BCHAINBOX
shortOwner: mlacity
Getting User Info: mlacity
Endpoint Address: http://148.100.4.122:3000/api/org.acme.sample.Usermlacity
Yaisah's Record!
username: zsteelma
systemname: BCHAINBOX
shortOwner: zsteelman
Getting User Info: zsteelman
Endpoint Address: http://148.100.4.122:3000/api/org.acme.sample.Userzsteelman
GET http://148.100.4.122:3000/api/org.acme.sample.Userpcronan 404 (Not Found) jquery.min.js:2
GET http://148.100.4.122:3000/api/org.acme.sample.Usermlacity 404 (Not Found) jquery.min.js:2
GET http://148.100.4.122:3000/api/org.acme.sample.Userzsteelman 404 (Not Found) jquery.min.js:2

```

Blockchain REST API POST Integration

- Modify the JavaScript/jQuery to take the inputs from the html form object and insert that information into the blockchain database using the POST REST API.

The screenshot shows a web browser with the 'Add User' form. The form has fields for User ID, First Name, Last Name, and Email. The developer console is open, showing the REST API POST request and the resulting JSON data. The console messages are as follows:

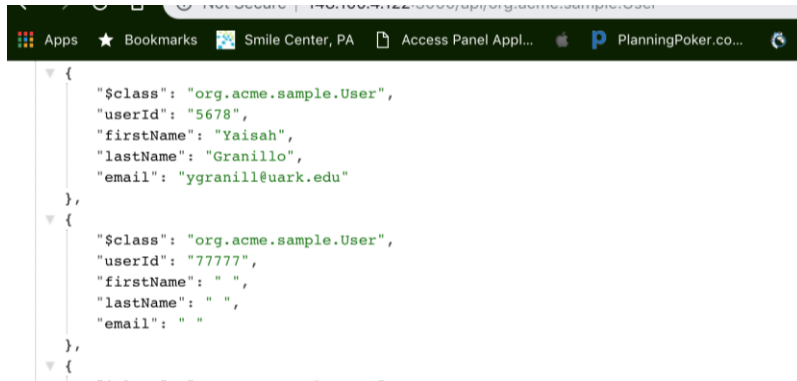
```

8 messages
Button Clicked
Yaisah
Granillo
ygranill@uark.edu
No warnings
No verbose
[{"class": "org.acme.sample.User", "userId": "5678", "firstName": "Yaisah", "lastName": "Granillo", "email": "ygranill@uark.edu"}]
24class=org.acme.sample.User&userId=5678&firstName=Yaisah&lastName=Granillo&email=ygranill@uark.edu
Done!

```

- **Blockchain REST API Testing**

- Utilizing the pages created, post a new user participant to the blockchain database using the form page that you created in the prior step.
- To verify that your page has input the correct information, view the actual JSON output from the REST API at the following link.



Linux Environment Setup

Using the blockchain UARK Linux server, create the necessary files and directories in your home directory to showcase your Linux navigation and development skills and house each of your developed files (note: you will also upload all files to Blackboard for archives).

```

I A myInfo.txt (Modified) (sh)
#!/bin/bash
echo "Hello World!"
echo "My name is Yaisah"
echo "My username is ygranill"
echo "My email is ygranill@uark.edu"
echo "Today's date is"
cal
date
echo

```

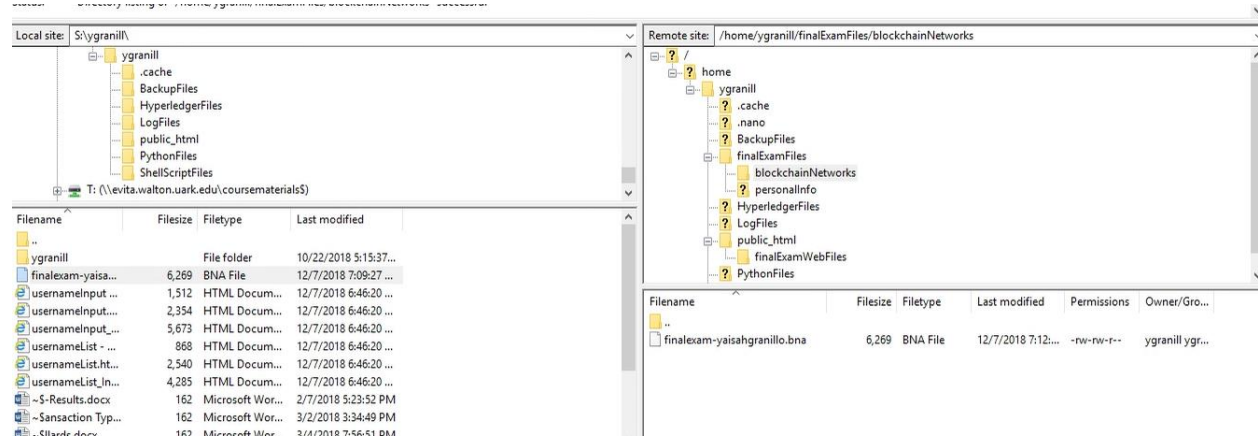
Output

```

Name of file to save (^C to abort): myInfo.txt
File myInfo.txt saved
ygranill@bchain:~/finalExamFiles$ bash myInfo.txt
Hello World!
My name is Yaisah
My username is ygranill
My email is ygranill@uark.edu
Today's date is
    December 2018
Su Mo Tu We Th Fr Sa
                1
 2  3  4  5  6  7  8
 9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30 31
Fri Dec  7 18:01:08 CST 2018

```

Bna File



Linux Scripting and Automation

```

ygranill@bchain: ~/finalExamFiles
^K cut line          ^W find first
^U paste             ^WW find next
I A finalExamOutputFiles.sh (Modified) (sh)
#!/bin/bash
cd /home/ygranill/finalExamFiles
echo "THESE ARE MY FINAL EXAM FILES"
tree
cd /home/ygranill/public_html
echo "THESE ARE MY PUBLIC HTML FILES"
tree

```