DUDE, Where's My Spot?

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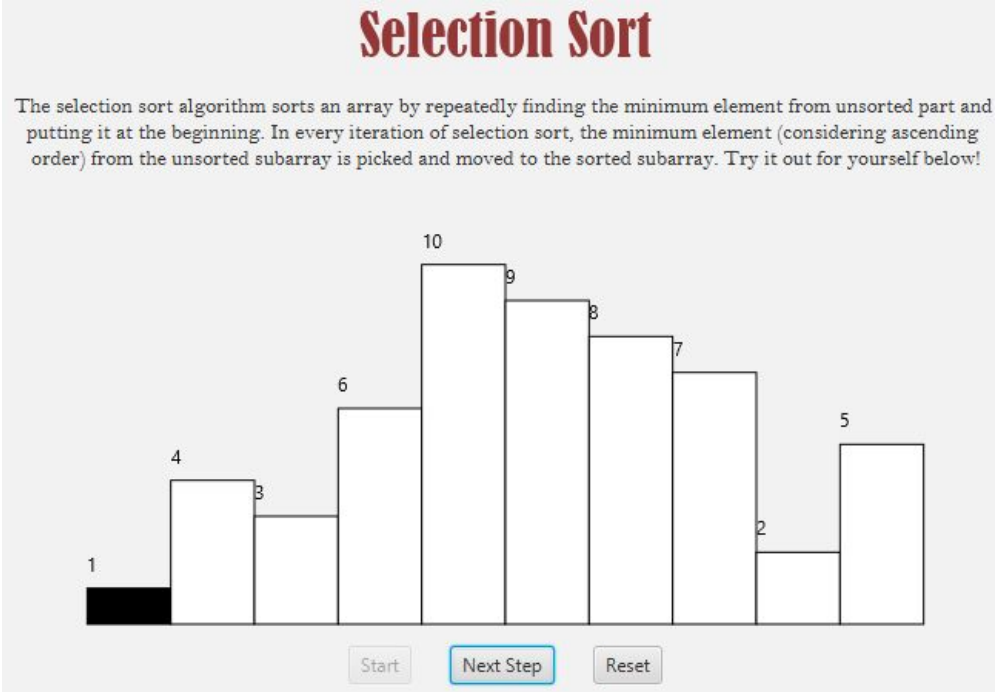
Topics Being Covered

- Selection and Bubble Sort
- Hashing
- Keep Me Logged In feature
- Binary Searching
- Weather Api
- Marquee Event Scroller

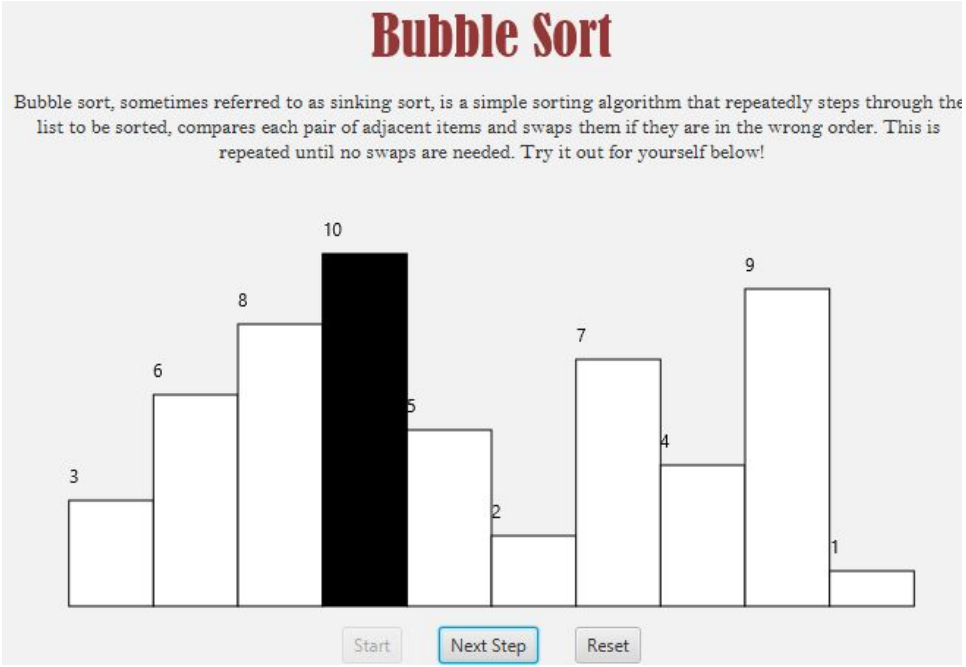
Selection Sort

```
// figuring out the next numbers being swapped in selection sort
public void nextStep() {
passNumber++;
   if (passNumber >= searchSize) { // end of sorting
      sortStepBtn.setDisable(true);
    passNumber = -1;
   } else {
    int currentMin = random.get(passNumber); // current number and
    int currentMinIndex = passNumber;

    for (int j = passNumber + 1; j < random.size(); j++) {
     if (currentMin > random.get(j)) { // looking for a smaller nu
      currentMin = random.get(j);
      currentMinIndex = j;
     }
    }
    if (currentMinIndex != passNumber) { // if the index of the sm
     random.set(currentMinIndex, random.get(passNumber)); // swap
     random.set(passNumber, currentMin);
    }
   }
}
```



Bubble Sort

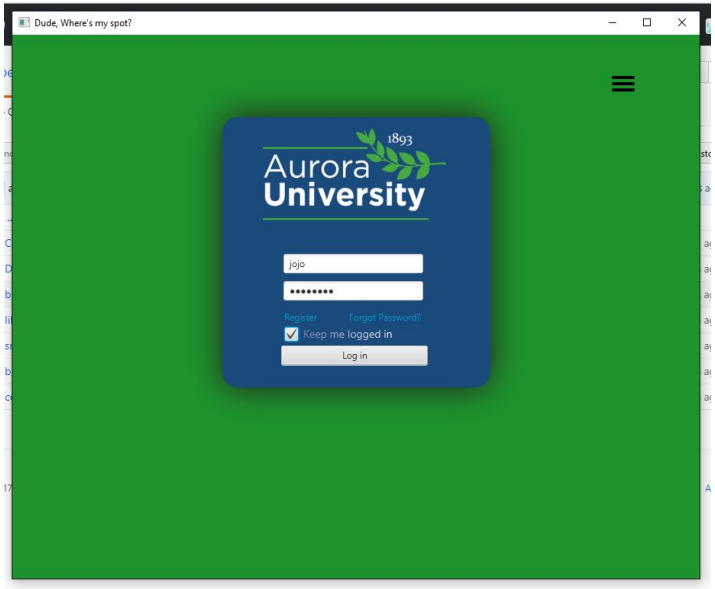
```
  passNumber++;
 }
}
if (passNumber >= searchSize) {
 bblStepBtn.setDisable(true);
 passNumber = -1;
}
else {
 if (endOfPass) {
  needNextPass = false;
  endOfPass = false;
  index = 0;
 }
 if (!endOfPass) {
  if (random.get(index) > random.get(index + 1)) {
   // Swap list[i] with list[i + 1]
   int temp = random.get(index);
   random.set(index, random.get(index + 1));
   random.set(index + 1, temp);
   needNextPass = true; // Next pass still needed
  }
  index++;
  if (!(index < random.size() - passNumber)) {
   endOfPass = true;
  }
 }
 if (endOfPass) {
  if (!needNextPass) {
   bblStepBtn.setDisable(true);
   passNumber = -1;
   index = -1;
  }
```

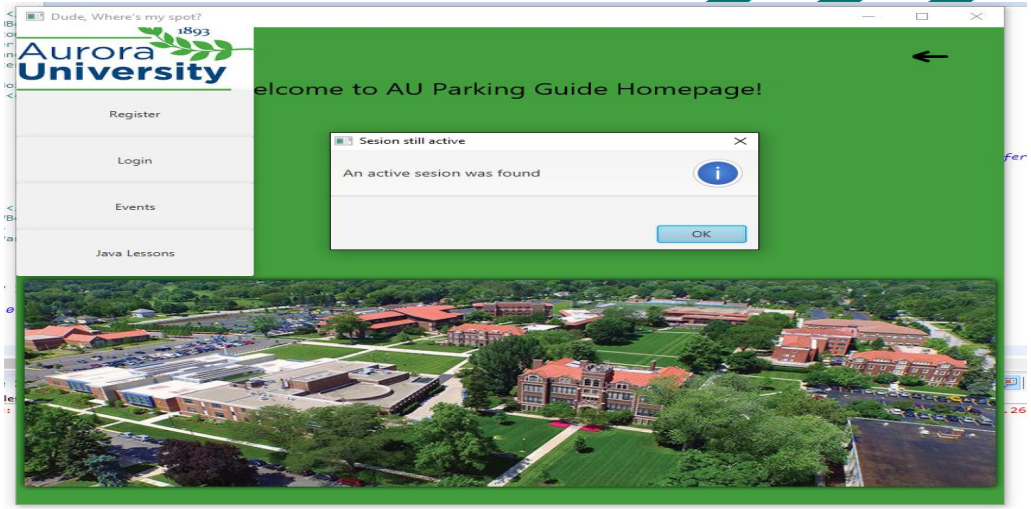


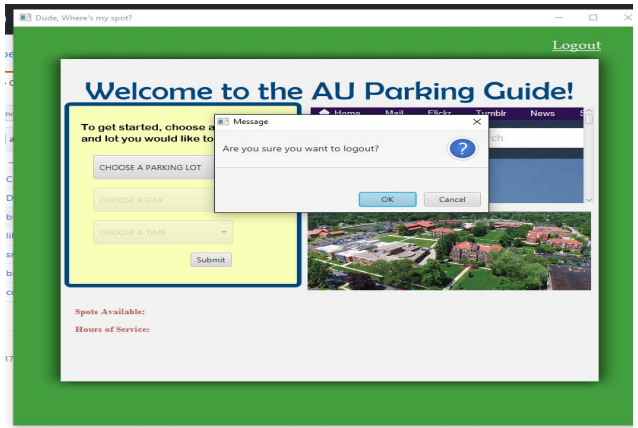
Hashing

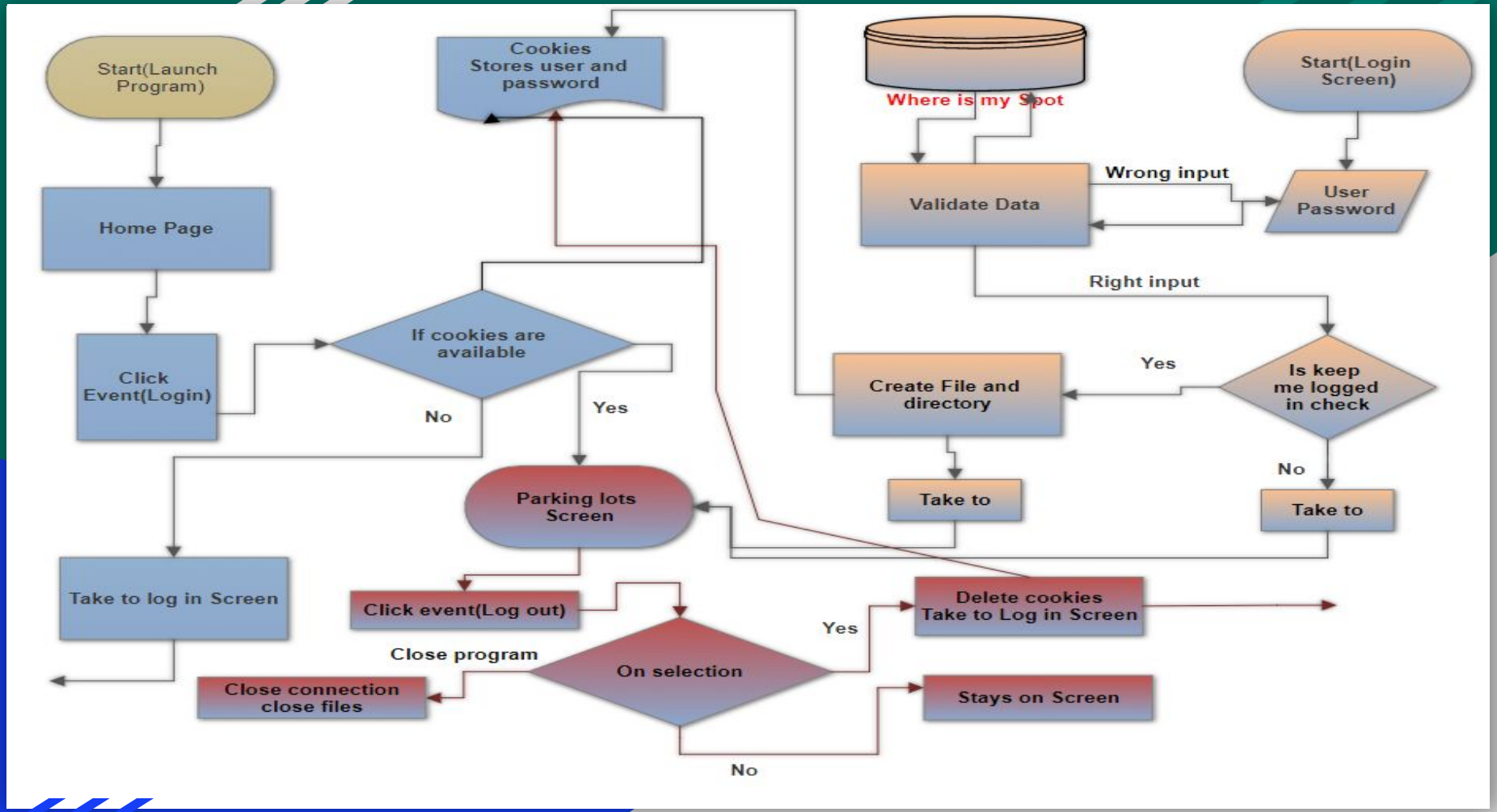
```
//get text from field
String toHashString = HashFld.getText();
//Create instance of the hashing class using sha-256 algorithm
MessageDigest messageDigest = MessageDigest.getInstance("SHA-256");
//hash string
messageDigest.update(toHashString.getBytes());
//Convert to hashed string bytes to String
String encryptedString = new String(messageDigest.digest());
//Display hashed String
showHashedStringTxtArea.setText(encryptedString);
```

Keep Me Logged In








Start(Launch Program)
Cookies Stores user and password
Where is my Spot
Start(Login Screen)
Home Page
Validate Data
Wrong input
User Password
Right input
Click Event(Login)
If cookies are available
No
Yes
Create File and directory
Yes
Is keep me logged in check
No
Take to
Take to
Parking lots Screen
Take to log in Screen
Click event(Log out)
Delete cookies Take to Log in Screen
Yes
Close program
On selection
Close connection close files
Stays on Screen
No

Binary Search

Front End

```
//When the run button is pushed
run.setOnAction( run->{
    int result;

    //Gather text from the textField
    String in = input.getText();
    int searchValue = Integer.parseInt(in);
    textArea.appendText("\n\nYou entered the number: " + in);

    //Display the current time in milliseconds when sorting started
    begin_time = System.currentTimeMillis();
    textArea.appendText("\nTime sorting started: " + begin_time);

    //Search for the value
    result = BinarySearch.search(numbers, searchValue);

    //Display the results
    if (result == -1)
    {
        //If the result is = -1 then the value was not found
        textArea.appendText("\n" + searchValue + " value cannot be found");
        textArea.appendText("\nTime sorting ended: " + stop_time);
        textArea.appendText("\nSelection Sort Took " + (stop_time - begin_time));
    } else {
        //If the result is found then display what element it was found at
        textArea.appendText("\n" + searchValue + " was found at element " + result);
        stop_time = System.currentTimeMillis();
        textArea.appendText("\nTime sorting ended: " + stop_time);
        textArea.appendText("\nSelection Sort Took " + (stop_time - begin_time));
    }
});

//If reset button is pushed...
reset.setOnAction(reset-> {
    //Text area and input is cleared. Then the array is displayed again
    textArea.clear();
    input.clear();
    textArea.appendText(Arrays.toString(numbers));
});
```

- Use an interval that covers the whole array to determine the midpoint
- Starts by searching a sorted array by repeatedly dividing the interval in half
- If the search value is less than the value of the middle index item, narrow the interval to the lower half of the array
- If opposite, narrow it to the upper half
- Continue checking until the value is found in the interval, or the array does not contain the value searched

Binary Search

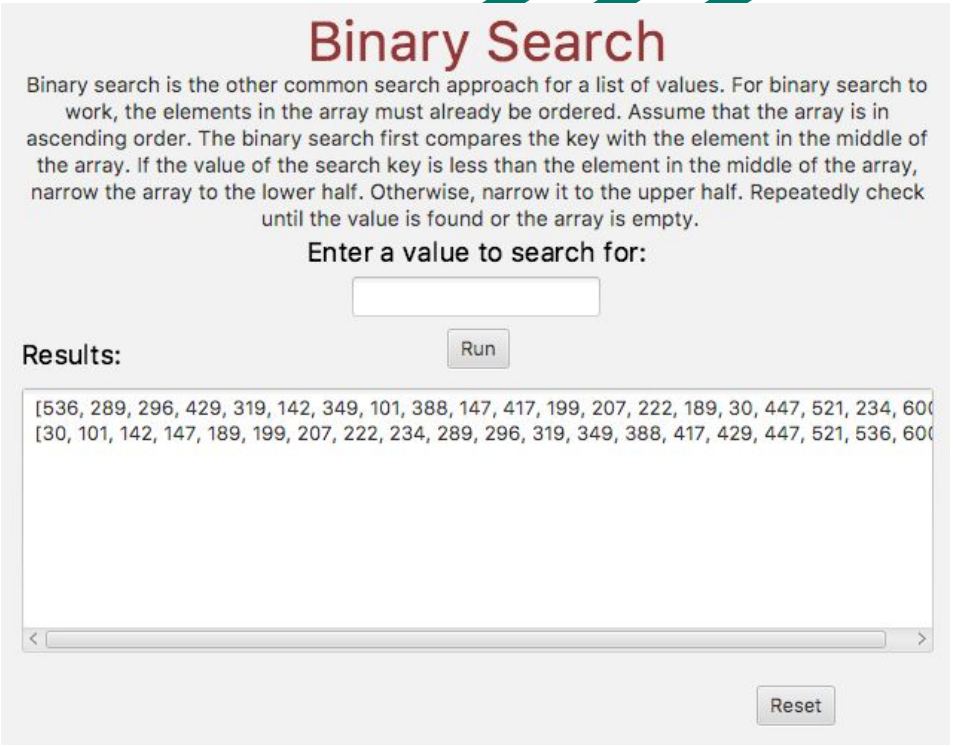
Back End

- The value entered is passed as a parameter to the function ‘search’, along with the array
- Perform a while loop to constantly search the array until the value is found or not found
- Calculates the midpoint of each half
- If the value equals the midpoint value, the variable ‘found’ becomes ‘true’ and exits the loop
- If the value is in the lower half, reduce the interval to the lower half only
- If the value is in the upper half, increase the interval to the upper half only
- If the value was not found, return the position as -1

```
//Set the initial values
first = 0;
last = array.length - 1;
position = -1;
found = false;

//Search for the value
while(!found && first <= last)
{
    //Calculate mid point
    middle = (first + last) / 2;

    //If value is found at midpoint...
    if(array[middle] == value)
    {
        found = true;
        position = middle;
    }
    //else if value is in lower half...
    else if (array[middle] > value)
        last = middle -1;
    //else if value is in upper half...
    else first = middle + 1;
}

//Return the position of the item, or -1
//if it was not found
return position;
```

Why We Will Not Use Binary Search

In our project, we will not be using binary search. We have decided to use a database to store data and can search/pull from the database using queries.



Weather API

Shows the temperature in fahrenheit

Shows the mode

http://api.openweathermap.org/data/2.5/weather?q=<ENTER CITY>&units=imperial&mode=html&appid=<ENTER API KEY>

Enter your city:
North Aurora, us

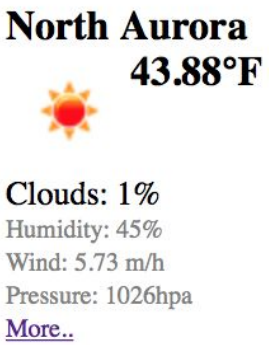
- Have your api key
- Create an html container
- Use to insert weather information

```
@FXML
private WebView weather;
@FXML
private ImageView lotImage;
@FXML
private Label spotsAv;
@FXML
private Labeled hoursAv;

public void initialize() throws Exception {
    WebEngine webEngine = weather.getEngine();
    webEngine.load("http://api.openweathermap.org/data/2.5/weather?q=North%20Aurora,%20us&units=imperial&
```

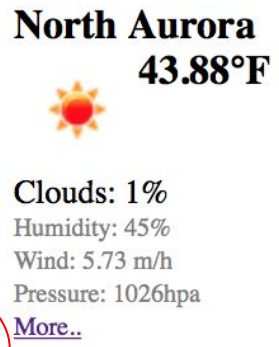
Weather API

http://api.openweathermap.org/data/2.5/weather?q=North%20Aurora,%20us&units=imperial&mode=html&appid=1906951238f29646ce8ef804bea0b524

```
<html lang="en">
<head>
<meta charset="utf-8">
<meta name="keywords" content="weather, world, openweathermap, weather, layer" />
<meta name="description" content="A layer with current weather conditions in cities for world wide" />
<meta name="domain" content="openweathermap.org" />
<meta http-equiv="pragma" content="no-cache" />
<meta http-equiv="Expires" content="-1" />
</head>
<body>
<div style="font-size: medium; font-weight: bold; margin-bottom: 0px;">North Aurora</div>
<div style="float: left; width: 130px;">
<div style="display: block; clear: left;">
<div style="float: left;" title="Titel">
<img height="45" width="45" style="border: medium none; width: 45px; height: 45px; background: url(&quot;http://openweathermap.org/img/w/01d.png&quot;) repeat scroll 0% 0% transparent;" alt="title" src="http://openweathermap.org/images/transparent.png"/>
</div>
```



```
<div style="float: left;">
<div style="display: block; clear: left; font-size: medium; font-weight: bold; padding: 0pt 3pt;"
title="Current Temperature">43.88°F</div>
<div style="display: block; width: 85px; overflow: visible;"></div>
</div>
</div>
<div style="display: block; clear: left; font-size: small;">Clouds: 1%</div>
<div style="display: block; clear: left; color: gray; font-size: x-small;" >Humidity: 45%</div>
<div style="display: block; clear: left; color: gray; font-size: x-small;" >Wind: 5.73 m/h</div>
<div style="display: block; clear: left; color: gray; font-size: x-small;" >Pressure: 1026hpa</div>
</div>
<div style="display: block; clear: left; color: gray; font-size: x-small;">
<a
href="http://openweathermap.org/city/4903818?utm_source=openweathermap&utm_medium=widget&utm_campaign=html_old" target="_blank">More..</a>
</div>
<script>(function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function(){
(i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new Date();a=s.createElement(o),
m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBefore(a,m)
})(window,document,'script','//www.google-analytics.com/analytics.js','ga');ga('create',
'UA-31601618-9', 'auto');ga('send', 'pageview');</script>
</body>
</html>
```



Jsoup and JavaFx Marquee

```
public String loop(String outPut) throws IOException {

final Document document =
Jsoup.connect("https://aurora.edu/academics/resources/academic-calen
dar.html#.WfjplNvMwYI").get();
 StringBuilder sb = new StringBuilder();
for (Element row : document.select("table tr")){
        Elements title = row.select("td");



        if (title.size() == 2) {
        outPut = (title.get(1).text() + " " + title.get(0).text()+"\n");
        outPut = sb.append(ouPut).toString();
        }
       }
        return outPut;
   }
```

```
<table border="1" cellpadding="4" cellspacing="1"
summary="2017-2018 Academic Calendar">
<tbody>
<tr>
<td width="63%">
<p>Opening Week - Faculty Orientation/Meetings</p>
</td>
<td width="37%">
<p>August 21-25</p>
</td>
</tr>
<tr>
<td width="63%">
<p>New Student Orientation</p>
</td>
<td width="37%">
<p>August 24-27</p>
</td>
</tr>
<tr></tr>
<tr style="background-color: #cccccc;">
<td width="63%">
<p><strong>Fall Semester Classes Begin</strong></p>
</td>
<td width="37%">
<p><strong>August 28<br/></strong></p>
</td>
</tr>
```

```
        txt.setText(loop(outPut));
            double msgWidth = txt.getLayoutBounds().getWidth();

            KeyValue initKeyValue = new KeyValue(txt.translateXProperty(),
200);
        KeyFrame initFrame = new KeyFrame(Duration.ZERO, initKeyValue);

        KeyValue endKeyValue = new KeyValue(txt.translateXProperty(), -1.0
            * msgWidth);
        KeyFrame endFrame = new KeyFrame(Duration.seconds(3),
endKeyValue);

        Timeline timeline = new Timeline(initFrame, endFrame);

        timeline.setCycleCount(Timeline.INDEFINITE);
        timeline.play();
```

August 21-25 Opening Week - Faculty Orientation/Meetings
August 24-27 New Student Orientation
August 28 Fall Semester Classes Begin
September 2 End of Add for day classes; evening classes may be added prior to second class meeting; end of 100% refund for Fall Semester
August 28 – October 21 8-week Fall Module I
September 4 Labor Day - no classes
October 13 Founders Convocation (no traditional day classes after 1:05 p.m.)
October 7 Module I - last day to drop with automatic "W"
October 20-22 Fall Weekend - no traditional day classes
October 23 - December 16 8-Week Fall Module II
November 11 Last day to drop fall semester classes with automatic "W"
November 22-26 Thanksgiving Holiday

Problems Encountered

>App-DB connection is not ideal(Not working)
>App-WebService-DB is ideal

Summary

- As of now we are up to date and working very well as a team
- We are encountering very little problems
- “The sky's the limit” mentality

*Add gif image here (haha)

What's Next?

- Demonstrate iterator and comparator
- (Possibility) → Add a tutorial video on how to use this app