Part 1: Introduction to Excel

Cells and Worksheets
Microsoft Excel consists of worksheets. Worksheets are made up of columns labeled with letters and rows labeled with number. Cells are referred to by their column letter followed by their row number. For example, the cell at the intersection of the third column and second row would be referred to as C2.

In the lower left hand corner you can see which worksheet is currently selected. In the picture below, Sheet1 is selected.

To enter text you may either: click on a cell and type in text directly or click in the formula bar area and enter text (or a formula) there.
#1 to the left is an example of entering text directly into a cell. The circle labeled #2 points to the formula bar.

To confirm data that you enter into a cell, either press the <Enter> key on your keyboard, click in another cell, or press the check mark (#3) on the formula bar.

To edit text that has been entered and confirmed, double click on the cell, or click on a cell and then click in the formula bar. To delete the contents of a cell simply select the cell and press the <Delete> key on your keyboard.

**Simple Math Formulas and Functions**

Open Excel and save the file as Hw3.xlsx. We are going to create five columns in our worksheet: columns for addition, subtraction, multiplication, division and AutoSum.

**Addition:**

1. Type **Add** in cell A1 and press enter.
2. Type **7** in cell A2 and press enter.
3. Type **92** in cell A3 and press enter.
4. Type **=A2+A3** in cell A5 and press enter.

You should see the number **99** in cell A5.

In step 4 it is important that you start with the = sign. This is how Excel knows that you are entering a formula.
Note: We will always use the relative cell names in the labs and homework, but you should know the absolute names for the exam. For help on the difference see http://www.cpearson.com/excel/relative.aspx. For further questions, ask a tutor during Homework Help hours.

Subtraction:

1. Type **Subtract** in cell B1.
2. Type **15** in cell B2.
3. Type **16** in cell B3.
4. Type **=B2-B3** in cell B5.

You should see the number **-1** in cell B5.

Multiplication:

1. Type **Multiply** in cell C1.
2. Type **55** in cell C2.
3. Type **6** in cell C3.
4. Type **=C2*C3** in cell C5. * is the star or asterisk key which you get by holding <Shift> and pressing <8>.

You should see **330** in cell C5.

Division:

1. Type **Divide** in cell D1.
2. Type **90** in cell D2.
3. Type **9** in cell D3.
4. Type **=D2/D3** in cell D5.

You should see **10** in cell D5.

Mod: To find the remainder we will use the modulo operation

1. Type **Mod** in cell E1.
2. Type **10** in cell E2.
3. Type **3** in cell E3.
4. Type **=MOD(E2,E3)** in cell E5.

You should see **1** in cell E5.
AutoSum:

1. Type **AutoSum** in cell G1.
2. Type 1 in cell G2.
3. Type 2 in cell G3.
4. Type 15 in cell G4.
5. Select cell G5 and press the AutoSum button. Then either press the enter key or the check mark on the formula bar.

The AutoSum button is in the upper-right-hand corner of the Home tab and looks like a summation. Depending on how large your window is, it may or may not say AutoSum.

Smaller Window

Larger Window

AutoSum sums up all values in a consecutive list of cells. By default it will sum the values immediately above the cell where you pressed the AutoSum button. Click on cell G5. If done correctly, you should see: \( =\text{SUM}(G2 : G4) \) in the formula bar.

What this says is that cell G5 contains the sum function and is summing the values in cells G2 through G4. The colon means *through* or \( G2 + G3 + G4 \). You should see the value **18** in cell G5.
Your worksheet should look something like this:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Add</td>
<td>Subtract</td>
<td>Multiply</td>
<td>Divide</td>
<td>Mod</td>
<td>AutoSum</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>15</td>
<td>55</td>
<td>90</td>
<td>10</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>92</td>
<td>16</td>
<td>6</td>
<td>9</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>99</td>
<td>-1</td>
<td>330</td>
<td>10</td>
<td>1</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The useful thing about using formulas and functions is that when you make a change to a value, your results will be updated.

Make the following changes to your worksheet:

1. Type 7 in cell A2.
2. Type 20 in cell B2.
3. Type 9 in cell C2.
4. Type 18 in cell D2.
5. Type 5 in cell E2.

Notice that the computed values in cells A5 through E5 (or in Excel terminology A5:E5) update as you enter the changes. What happens if you copy the content of cell A5 to cell B5?

**Inserting and Deleting Columns and Rows**

Excel is a little funny about deleting things. When you press the delete button it just erases all the data present in the currently selected cells.

One way to remove or delete entire rows or columns is:

1. Right click on the letter above a column (or number to the left of a row).
2. Select **Insert** (or **Delete**) from the drop-down list.

Now, delete the column between the AutoSum function and the other math functions (Column F).

Next, insert a row between row 1 and row 2 (select row 2 and right click and insert). Now you will see a blank cell in F2. Insert a value (say 100) and see how the AutoSum value changes. If it does not change, why and how could you fix it?
Your worksheet should look something like this after finishing:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Add</td>
<td>Subtract</td>
<td>Multiply</td>
<td>Divide</td>
<td>Mod</td>
<td>AutoSum</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>15</td>
<td>55</td>
<td>90</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>92</td>
<td>16</td>
<td>6</td>
<td>9</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>99</td>
<td>-1</td>
<td>330</td>
<td>10</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>136</td>
<td></td>
</tr>
</tbody>
</table>

**Long Text and Changing Column Width**

You’ll notice that sometimes what you type into a particular cell does not fit into the cell. Change to Sheet2 (by clicking on Sheet2 in the lower left-hand corner) and try the following:

1. Type (or copy/paste) the following into cell A1:

   “People say nothing is impossible, but I do nothing every day” — Winnie The Pooh

2. Type “test” into cell B1:

You’ll notice that your long sentence in A1 is being over lapped by the word Test in cell B1.

Your long sentence is still there, but it is not visible. In order to see it, you need to change the width of Column A.

To change the width of a column, place the cursor on the line between two column letters. When you do this, your cursor should change to look like the image on the right.
Now you can click and drag to change the width of the column, or if you prefer, you can just double click on that line between the columns and Excel will automatically expand column A until all the text in cell A1 is visible. (If you ever have more than one column that you want to expand this way, you can highlight all the columns by clicking in the space to the left of A, and then clicking on the line between any two columns. This should expand all columns automatically.)

**Rotating text in a cell**

Excel allows you to enter text in diagonal fashion inside a cell.

1. Type **Brunch** in cell C6

2. Click on the ‘Orientation’ icon located somewhere in the Alignment section on the Home tab.

3. From the list of options that appears, select ‘Angle Counterclockwise’

This is what happens next!
**AutoFill**

Let’s say you wanted to enter a series of numbers like 1, 2, 3, 4... into several cells. It could take you a very long time to enter a separate number into each cell. Excel has addressed this problem with their AutoFill feature. AutoFill works with numbers, months and days of the week, and various other things that are series.

Let us try AutoFill with **months of the year** now.

1. Go to the bottom of Excel and select the Sheet3 tab.
2. Type *January* into cell A1.
3. Type 1 into cell B1.
5. Click and drag the AutoFill handle in the lower right hand corner of cell B1 down to cell B10.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>January</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>11</td>
<td>10</td>
</tr>
</tbody>
</table>

6. The AutoFill handle is located at the bottom right corner of each square on the grid.

   **Notice how the cursor changes when it hovers over the AutoFill handle, it will be a “+” sign**
Now let us try AutoFill with **number patterns**.

Fill in a few cells with numbers and based on the values you provided, Excel can automatically understand how to continue the pattern.

1. Type 5, 10, 15 in cells D1, D2 and D3 respectively.
2. Type 20, 18, 16 in cells E1, E2 and E3 respectively.
3. Select cells D1 through E3, that is, select cells D1, D2, D3, E1, E2 and E3.

4. Click and drag the AutoFill handle in the lower right hand corner of cell E3 down to cell E10

As you see, the values of column E decrease by 2, whereas the values of column A increase by 5. This is because, based on the first three values that you entered (20, 18, 16) in column E, Excel knows to fill column E with increments of 2. Similarly, Excel knows to list increments of 5 in column D.
**Homework Check-off (Part 1 of 2)**

Show the following to the person checking you off:

1. Your sheet 1 with your math formulas
2. Your sheet 2 with your text properly formatted
3. Your sheet 3 with your months of the year and number series
4. Demonstrate that you know how to enter a formula into a cell (hint: this is what you did with your math formulas)
5. Demonstrate that you know how to use the fill handle
6. Demonstrate that you know how to change the width of a column
7. Demonstrate that you know how to rotate text in a cell

**Part 2: Four Year Plan**

Having a flexible, yet written down, four year plan can be very helpful at any and all stages of your degree. Whether you are a first-year or a soon-to-be-graduate senior, it is helpful to have a plan for graduation and a record of courses you’ve taken.

**Step 1:**

The amount of work it will take to complete this homework depends on where you are in your degree and how many choices you still have to make.

- Look up courses you have already taken on your Academic History page on TritonLink.
- Look up your department’s webpage and find their suggested four year plan AND look up your college and view their suggested four year plan, including GE requirements. *Note: If you are undeclared, just choose a major that interests you.*

- Computer Science plans can be found at [http://cse.ucsd.edu/node/35](http://cse.ucsd.edu/node/35)
- Various Biology plans can be found at [http://biology.ucsd.edu/education/undergrad/maj-min/majors/index.html](http://biology.ucsd.edu/education/undergrad/maj-min/majors/index.html)
- Psychology plans can be found at [http://psychology.ucsd.edu/undergraduate-program/index.html](http://psychology.ucsd.edu/undergraduate-program/index.html)
- Economics plans can be found at [http://economics.ucsd.edu/ugrad/ugradMajorMinorReqs/econBA.php](http://economics.ucsd.edu/ugrad/ugradMajorMinorReqs/econBA.php)
- for Revelle College [revelle.ucsd.edu/academics/four-year-plans/index.html](http://revelle.ucsd.edu/academics/four-year-plans/index.html)
- for Muir College
  muir.ucsd.edu/academics/sampleplans.html
- for Marshall College
  https://marshall.ucsd.edu/academics/four-year-plans.html
- for Roosevelt College
  https://aventeur.ucsd.edu/public/student_four_year_plans/?currentCollege=FI
- for Warren College
  https://aventeur.ucsd.edu/public/student_four_year_plans/?currentCollege=WA
- for Sixth College
  http://sixth.ucsd.edu/academics/fouryear-plans/index.html

**Step 2:**

- Create lists of all of the classes that you took each quarter since you came to UCSD
- Using your department’s four year plan and your personal goals and requirements, figure out what classes you should PLAN on taking each quarter for the rest of your time at UCSD.
  - Your plan can be very specific:
    - What specific classes you plan on taking which quarter
  - Or very general:
    - You can simply say that you plan on taking a General Education course if you don’t know what you want to take
- If you are a transfer student:
  - If you were previously on semester/trimester system, just fill in the courses under the Fall and Winter quarters which you took those years.
  - Alternatively, you can just list the courses you have taken/are planning to take at UCSD. Just be careful that you don’t miss any GE, major, or university requirements.

This step can take a long time if you’re at the beginning or in the middle of your degree, probably somewhat less time if you’re at the end. You should take the time you need to **create a useful plan for yourself.** Don’t rush it. But also know that plans and situations change, and this four year plan isn’t carved in stone. Be flexible.

**Step 3:**

Create a new Excel workbook and save it as FourYearPlan.xlsx. Enter information you put together for your four year plan in step two. Some basic formatting (making headers bold and the information centered) can make it easier to read.
Here’s an example of what your spreadsheet might look like if you were a CSE major in the middle of your Sophomore year:

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>CSE 91 (2 units)</td>
<td>CSE 12 - Data Structures</td>
<td>CSE 20 - Discrete Math</td>
</tr>
<tr>
<td></td>
<td>CSE 11 - Intro. Programming</td>
<td>CSE 15L (2 units)</td>
<td>CSE 70 - Software Eng.</td>
</tr>
<tr>
<td></td>
<td>Math 20A - Calculus</td>
<td>Math 20B - Calculus</td>
<td>Math 20C - Calculus</td>
</tr>
<tr>
<td></td>
<td>Econ 1 - Microeconomics</td>
<td>Econ 2 - Markets and Policy</td>
<td>Econ 3 - Macroeconomics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two</td>
<td>CSE 21</td>
<td>CSE 30 - Systems</td>
<td>CSE 100</td>
</tr>
<tr>
<td></td>
<td>Math 20D - Diff Equations</td>
<td>Math 20F - Linear Algebra</td>
<td>CSE 101</td>
</tr>
<tr>
<td></td>
<td>Phys 2A - Mechanics</td>
<td>Phys 2B - Elect&amp;Mag</td>
<td>Phys 2C - Waves</td>
</tr>
<tr>
<td></td>
<td>Spanish 1A1Ax</td>
<td>Spanish 1B1Bx</td>
<td>Spanish 10/1C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three</td>
<td>CSE 120</td>
<td>CSE 105</td>
<td>CSE Technical Elective</td>
</tr>
<tr>
<td></td>
<td>CSE 140</td>
<td>CSE 141</td>
<td>CSE Technical Elective</td>
</tr>
<tr>
<td></td>
<td>CSE 14L (2 units)</td>
<td>CSE 141L (2 units)</td>
<td>General Education</td>
</tr>
<tr>
<td></td>
<td>General Education</td>
<td>General Education</td>
<td>General Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four</td>
<td>CSE 130</td>
<td>CSE 131</td>
<td>General Education</td>
</tr>
<tr>
<td></td>
<td>CSE Technical Elective</td>
<td>CSE Technical Elective</td>
<td>General Education</td>
</tr>
<tr>
<td></td>
<td>General Education</td>
<td>General Education</td>
<td>General Education</td>
</tr>
</tbody>
</table>

**Step 4:**

Once you have your four year plan put together, you can use various formatting options to make it more readable. You should:

- Group information visually using color or patterns to specify
  - Required courses
  - Electives
  - Courses you have/haven’t taken already
  - Etc…
  - To do this select the desired cells to color and then click the Fill Color button *(red arrow)* and then choose a color.
  - Or change the text color *(blue arrow)*

- Add borders to separate quarters and years *(green arrow)*

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**Note:**
- The arrows and buttons in the diagram are for illustrative purposes and may not be accurately represented in this text format.
- The spreadsheet is an example and may not reflect your specific course offerings or requirements.
• Merge cells together to accurately label sections (Year) or to create a title (use the
button – red circle)

• Add a legend, if you wish

One example of a completed schedule:

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>CSE 91 (2 units)</td>
<td>CSE 12 - Data Structures</td>
<td>CSE 20 - Discrete Math</td>
</tr>
<tr>
<td></td>
<td>Math 20A - Calculus</td>
<td>Math 20B - Calculus</td>
<td>Math 20C - Calculus</td>
</tr>
<tr>
<td></td>
<td>Econ 1 - Microeconomics</td>
<td>Econ 2 - Markets and Policy</td>
<td>Econ 3 - Macroeconomics</td>
</tr>
<tr>
<td>Two</td>
<td>CSE 21</td>
<td>CSE 30 - Systems</td>
<td>CSE 190</td>
</tr>
<tr>
<td></td>
<td>Math 20D - Diff Equations</td>
<td>Math 20F - Linear Algebra</td>
<td>CSE 191</td>
</tr>
<tr>
<td></td>
<td>Phys 2A - Mechanics</td>
<td>Phys 2B - Elec&amp;Mag</td>
<td>Phys 2C - Waves</td>
</tr>
<tr>
<td></td>
<td>Spanish 1A/1Ax</td>
<td>Spanish 1B/1Bx</td>
<td>Spanish 1C/1Cx</td>
</tr>
<tr>
<td>Three</td>
<td>CSE 120</td>
<td>CSE 105</td>
<td>CSE Technical Elective</td>
</tr>
<tr>
<td></td>
<td>CSE 140</td>
<td>CSE 141</td>
<td>CSE Technical Elective</td>
</tr>
<tr>
<td></td>
<td>CSE 140L (2 units)</td>
<td>CSE 141L (2 units)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>General Education</td>
<td>General Education</td>
<td>General Education</td>
</tr>
<tr>
<td>Four</td>
<td>CSE 130</td>
<td>CSE 131</td>
<td>General Education</td>
</tr>
<tr>
<td></td>
<td>General Education</td>
<td>General Education</td>
<td>General Education</td>
</tr>
</tbody>
</table>

Legend:
- CSE Required Course
- CSE Technical Elective
- Required Math Course
- Required Physics Course
- General Education
- Planned Courses
Alternatively, if you plan to print your schedule, and you want to use less colored ink, you may use text colors instead of fill colors. An example of this:

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011-2012</td>
<td>MATH 20A</td>
<td>MATH 20B</td>
<td>MATH 20C</td>
<td>GE</td>
</tr>
<tr>
<td></td>
<td>MAE 9</td>
<td>PHYS 2A</td>
<td>PHYS 2B</td>
<td>Major Req</td>
</tr>
<tr>
<td></td>
<td>CHEM 6A</td>
<td>CHEM 6B</td>
<td>CHEM 6C</td>
<td>Tech Elective</td>
</tr>
<tr>
<td></td>
<td>CENG 1</td>
<td>WCWP 10A</td>
<td>WCWP 10B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CHEM 7L</td>
</tr>
<tr>
<td>2012-2013</td>
<td>PHYS 2C</td>
<td>CHEM 140A</td>
<td>CHEM 120A</td>
<td>summer job (e.g.</td>
</tr>
<tr>
<td></td>
<td>PHYS 2CL</td>
<td>PSYC 1</td>
<td>PSYC 188</td>
<td>AMC Theaters,</td>
</tr>
<tr>
<td></td>
<td>MATH 20D</td>
<td>MATH 20F</td>
<td>MATH 20E</td>
<td>Levi's, Knott's</td>
</tr>
<tr>
<td></td>
<td>CENG 100</td>
<td>CENG 102</td>
<td>CENG 113</td>
<td>Berry Farm)</td>
</tr>
<tr>
<td></td>
<td>PHIL 27</td>
<td></td>
<td>PHIL 28</td>
<td></td>
</tr>
<tr>
<td>2013-2014</td>
<td>CHEM 131</td>
<td>CHEM 132</td>
<td>CHEM 133</td>
<td>internship!!</td>
</tr>
<tr>
<td></td>
<td>MAE 170</td>
<td>MATH 183</td>
<td>PSYC 166</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CENG 101A</td>
<td>CENG 101B</td>
<td>CENG 101C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MAE 118</td>
<td>MAE 119</td>
<td>MAE 120</td>
<td></td>
</tr>
<tr>
<td>2014-2015</td>
<td>CENG 120</td>
<td>CENG 124A</td>
<td>CENG 124B</td>
<td>JOB! 😊</td>
</tr>
<tr>
<td></td>
<td>CENG 122</td>
<td>CENG 176A</td>
<td>CENG 176B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NANO 164</td>
<td>PHIL 170</td>
<td>TDGE 124</td>
<td></td>
</tr>
</tbody>
</table>
Part 3: HTML with mermaids

Since everyone has now seen how to use HTML tags to create a webpage (Lab 3), it’s time to try out your new skills and do one on your own.

**Step 1:**

Open a new page in Notepad++ and save it as MermaidDog.html

**Step 2:**

Create a document that looks just like:

```
The seaweed is *always* greener in CSE 3

Look at this stuff, isn't it neat?
```

Hints:

- The title is **Under The Sea**
- The background color is “**Aquamarine**”
- Everything is **centered**
- “**Always**” is italicized
- “**Seaweed**” is underlined
- The ‘**CSE 3**’ is a link to the class webpage  
- UCSD seal is a link to the **UCSD** homepage  
  - http://ucsd.edu/
- The whole text ‘The seaweed is always greener’ is a `<h2>` header
- There is **horizontal line** stretching across half the page and it is ‘**Blue**’
- “**neat**” is **bold**.
- The Mermaid Dog **image** can be found on the class website under homework files.
- Make sure to save the image in the **SAME directory** as your MermaidDog.html
Checkoff (Part 2 of 2)

This portion of your homework must be online in order to get credit for it. Show the following:

1. FourYearPlan.xlsx with nice formatting (e.g. colors, borders, etc.)
2. MermaidDog.html ONLINE. Make sure both your links work and the image shows up correctly.

Late homework will NOT be accepted without permission from the professor.

B. Putting it online

To get credit for your homework, it must be online, just like you do with your labs.

- Make sure your plan is saved as something like FourYearPlan.xls or FourYearPlan.xlsx and the HTML page is saved as MermaidDog.html.
- Modify your CSE3Page.html to link to the following:
  - FourYearPlan.xlsx
  - MermaidDog.html
    
    You can put the links under Lab 3, or create a new section for homework 3.

- Transfer the files to your web server. (See Lab1 if you don’t remember how to do this.)