Before we begin

QZ3  No online quiz this week
HW3  New Deadline July 18
PP   Proposals due July 18
PL   Prelim July 19
Today

- Grading Matrix
- Writing to files
- Reading from files
- Plot function
Grading Projects

10 groups

Every group will grade other groups
For each group three points
P0: Grade from us
P1: Weighted average grade by peers
P2: Penalty for misjudging others and yourself
Prelim (15pt) + Project (15pt)
P1 - P2: Demo, Presentation (peer grading) (8pt)
P0: Code, Documentation (graded by us) (7pt)
Example - 4 Groups

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>EY</th>
<th>P0</th>
<th>P1</th>
<th>P2</th>
<th>Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>100</td>
<td>60</td>
<td>80</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G2</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G3</td>
<td>80</td>
<td>90</td>
<td>50</td>
<td>100</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4</td>
<td>40</td>
<td>30</td>
<td>50</td>
<td>40</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[
P1(i) = \frac{eEY(i) + \sum_{j \neq i} G(i, j) + (\pi - e)G(i, i)}{n + \pi - 1}
\]

\[
P2(i) = \frac{\sum_j |G(j, i) - P1(j)|}{n}
\]

\[
Grades(i) = P0(i) + P1(i) - P2(i)
\]

\[
e \approx 2.72 \quad \pi - e \approx 0.42
\]
fopen

Opens a file

\[
f = \text{fopen}('cs1109.txt','w');
\]

Usage

\[
fid = \text{fopen}('cs1109.txt','w');
f = \text{fopen}(filename);
fid = \text{fopen}(filename, \text{permission});
\]

% returns id's of all open files
\[
fids = \text{fopen}('all');
\]
Opening a File - Permissions

Permissions

'\texttt{r}’ Open file for reading.

'\texttt{w}’ Open or create new file for writing.
Existing content is discarded.

'\texttt{a}’ Open or create new file for writing.
Append data to the end of file.

'\texttt{r+}’ Open for reading and writing.

'\texttt{w+}’ Open or create new file for reading and writing.
Existing content is discarded.

'\texttt{a+}’ Open or create new file for reading and writing.
Append data to the end of the file.
**Writing to a File**

- **fprintf**
  - Writes formatted data to the file

  ```c
  fprintf(f, '%d %10.5f', n, x);
  ```

- **Usage**

  ```c
  count = fprintf(fid, format, A, ..);
  ```
Closing a File

fclose
Closes a file

```
fclose(f);
```

Usage

```
status = fclose(fid);

% closes all open files
status = fclose('all');
```
Writing to a File - Example

Sine Table

def = 0:90;
rad = deg * pi/180;
s = sin(rad);

% let's open a file
f = fopen('sintable.txt','w');

% write values to the file
for j = 1:length(def)
    fprintf(f,'%2d %8.6f\n',deg(j),s(j));
end

% and close it!
fclose(f);
Appending to a File - Example

Sine Table

deg = 91:180;
rad = deg * pi/180;
s = sin(rad);

% let's open a file
f = fopen('sintable.txt','a');

% write values to the file
for j = 1:length(deg)
    fprintf(f,'%2d %8.6f\n',deg(j),s(j));
end

% and close it!close(f);
fprintf is talented

deg = 0:90;
rad = deg * pi/180;
s = sin(rad);

% let's open a file
f = fopen('sintable.txt','w');

% write values to the file
data = [deg; s];
fprintf(f,'%2d %8.6f
',data);

% and close it!
fclose(f);
Reading from a File

**fscanf**

Reads formatted data from a file

```
[d, s] = fscanf(f, '%2d %8.6f\n');
```

**Usage**

```
A = fscanf(fid, format);
[A, count] = fscanf(fid, format, size);
```
% let's open a file for reading
f = fopen('sintable.txt','r');

% read values from the file
[data, count] = fscanf(f,'%d %f', [2 inf]);

% let's display the values
disp(data)

% and close it!
fclose(f);
Read data from file

Ithaca Temperature June 2012

<table>
<thead>
<tr>
<th>Day</th>
<th>Max</th>
<th>Min</th>
<th>Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>67</td>
<td>43</td>
<td>55</td>
</tr>
<tr>
<td>2</td>
<td>67</td>
<td>52</td>
<td>60</td>
</tr>
<tr>
<td>3</td>
<td>67</td>
<td>51</td>
<td>59</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>30</td>
<td>90</td>
<td>61</td>
<td>76</td>
</tr>
</tbody>
</table>

```c
f = fopen('ithaca_june_2012.txt','r');
data = fscanf(f, '%d %d %d %d', [4 inf]);
fclose(f);
```
```matlab
% plot daily maximum temperature
plot(data(1,:), data(2,:));
```
% plot with stars in red color
plot(data(1,:), data(2,:), 'r*');
% connect data points, use circles
plot(data(1,:), data(2,:), 'ro-');
figure
Creates a new figure window

Usage

figure
figure(h)
h = figure(...)

Plotting - Figure
Example

```matlab
figure(1) % plot max temp
plot(data(1,:),data(2,:),'r')

figure(2) % plot min temp
plot(data(1,:),data(3,:),'b')

figure(3) % plot avg temp
plot(data(1,:),data(4,:),'g')
```
Plotting - hold on/off

hold on
holds the current plot

figure
hold on
plot(data(1,:), data(2,:), 'r')
plot(data(1,:), data(3,:), 'b')
plot(data(1,:), data(4,:), 'g')
hold off % back to normal state
Plotting - Hold
title('Ithaca Daily Temperature − June 2012')
xlabel('Days of June 2012')
ylabel('Temperature (F)')
legend('Max', 'Min', 'Avg')