ENG EK 127 - Worksheet 8A

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The minimum set is all problems.

1) Write a function *convstrs* that will receive a cell array of character vectors and a character 'u' or 'l'. If the character is 'u', it will return a new cell array with all of the character vectors in uppercase. If the character is 'l', it will return a new cell array with all of the character vectors in lowercase. If the character is neither 'u' nor 'l', *or* if the cell array does not contain all character vectors, the cell array that is returned will be identical to the input cell array.

```
function outstr = convstrs2(instr, var)
if iscellstr(instr) == 0
    outstr = instr;
elseif var == 'u'
    outstr = upper(instr);
elseif var == 'l'
    outstr = lower(instr);
else
    outstr = instr;
end
```

```
in = {'helLo', 'bYe', 'aSdf', 'jLJk'};
out1 = convstrs2(in, 'u');
celldisp(out1);
out2 = convstrs2(in, 'l');
celldisp(out2);
out3 = convstrs2(in, 'b');
celldisp(out3);

in = {33, 'bYe', 'aSdf', 'jLJk'};
out4 = convstrs2(in, 'u');
celldisp(out4);
```

```
out1{1} =

HELLO


out1{2} =

BYE


out1{3} =

ASDF


out1{4} =

JLJK
```

```
out2{1} =

hello


out2{2} =

bye


out2{3} =

asdf


out2{4} =

jljk
```

```
out3{1} =

helLo


out3{2} =

bYe


out3{3} =

aSdf


out3{4} =

jLJk
```

```
out4{1} =

    33


out4{2} =

bYe


out4{3} =

aSdf


out4{4} =

jLJk
```

2) Create a cell array variable that would store for a student his or her name, university id number, and GPA. Print this information.

```
1      name = 'Frank';
2      idnum = 'U12345678';
3      gpa = 0.1;
4
5      studentinfo = {name, idnum, gpa};
6      celldisp(studentinfo);
```

```
studentinfo = {name, idnum, gpa};
celldisp(studentinfo);

studentinfo{1} =

Frank


studentinfo{2} =

U12345678


studentinfo{3} =

    0.1000
```

3) Create a structure variable that would store for a student his or her name, university id number, and GPA. Print this information.

```
1      studentinfo = struct('Name', 'Frank', 'ID', 'U12345678', 'GPA', 0.1);
2      disp(studentinfo);
```

```
    Name: 'Frank'
      ID: 'U12345678'
     GPA: 0.1000

>>
```

4) Create a data structure to store information about the elements in the periodic table of elements. For every element, store the name, atomic number, chemical symbol, class, atomic weight, and a 7-element vector for the number of electrons in each shell. Create a structure variable to store the information, for example for lithium:

Lithium 3 Li alkali_metal 6.94 2 1 0 0 0 0 0

```
1 -    neon = struct('Name', 'Neon', 'AtomicNum', 10, 'Symbol', 'Ne', 'Class',...
2          'noble gasses', 'AW', 20.180, 'econfig', [2 8 0 0 0 0 0]);
3 -    disp(neon)
```

```
>> WS8A_4
         Name: 'Neon'
    AtomicNum: 10
       Symbol: 'Ne'
        Class: 'noble gasses'
           AW: 20.1800
      econfig: [2 8 0 0 0 0 0]
```