

Syntax

Entries Separated by Commas

```
C = { 'Alabama', 'New York', 'Utah' };
```

Curly Brackets

Another Way to Make a Cell Array

```
C = { 'Alabama', 'New York', 'Utah' };
```

```
C = cell(1,3);
C{1} = 'Alabama';
C{2} = 'New York';
C{3} = 'Utah';
```

Application: Storing strings

Creating Vertical Cell Arrays

```
C = { 'Alabama'; 'New York'; 'Utah' };
```

Semicolons

```
C = cell(3,1);
C{1} = 'Alabama';
C{2} = 'New York';
C{3} = 'Utah';
```

Three Rows, One Column

Initializations...

```
suit = {'Hearts', 'Clubs', ...
        'Spades', 'Diamonds'};
```

```
rank = {'A','2','3','4','5','6',...
        '7','8','9','10','J','Q','K'};
```

```
A = cell(1,52);
```

Nested Loops to Get All Combinations...

```
% i is index of next card...
i = 1;
for k=1:4
% Set up the cards in suit k
    for j=1:13
        A{i} = [ rank{j} ' ' suit{k} ];
        i = i+1
    end
end
```

Deal a Length-12 Card Deck

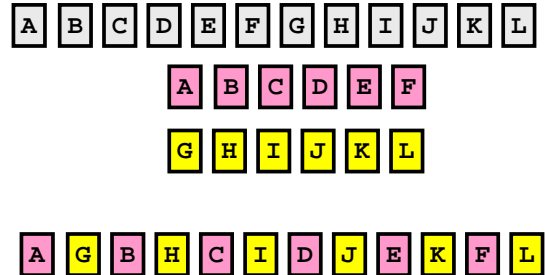
A: ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■

N:	■ ■ ■	1, 5, 9	$4k-3$
E:	■ ■ ■	2, 6, 10	$4k-2$
S:	■ ■ ■	3, 7, 11	$4k-1$
W:	■ ■ ■	4, 8, 12	$4k$

```
N = cell(1,13); E = cell(1,13);
S = cell(1,13); W = cell(1,13);
```

```
for k=1:13
    N{k} = A{4*k-3};
    E{k} = A{4*k-2};
    S{k} = A{4*k-1};
    W{k} = A{4*k};
end
```

Step 2: Alternate



Resulting Code

```
function T = Shuffle(S)
n = length(S); m = n/2;
T = cell(n,1);
Top = S(1:m); Bot = S(m+1:n);
for k=1:m
    T{2*k-1} = Top{k};
    T{2*k} = Bot{k};
end
```

If You Want a Random Shuffle...

- Use built-in function: `randperm(n)`
 - Produces a random permutation of the numbers 1:n

```
>> randperm(52)
ans =

Columns 1 through 15
24 31 8 42 21 25 15 50 51 27 30 39 26 2 29

Columns 16 through 30
49 22 44 16 19 36 48 10 33 7 35 4 46 38 28

Columns 31 through 45
3 11 40 43 52 47 14 32 6 12 23 9 45 41 37

Columns 46 through 52
5 20 18 13 34 17 1
```

Goal...

```
C{1} = 'I'
C{2} = 'II'
C{3} = 'III'
:
C{2007} = 'MMVII'
:
C{3999} = 'MMMCMXCIX'
```

Tens-Place Conversion

```
function r = Tens2R(x)
% x is an integer that satisfies
% 0 <= x <= 9
% r is the Roman numeral with value 10x.

Tens = {'X', 'XX', 'XXX', 'XL', 'L', 'LX', 'LXX', 'LXXX', 'XC'};

if x==0
    r = '';
else
    r = Tens(x);
end
```