Cell Arrays (1A)

Please send corrections (or suggestions) to youngwlim@hotmail.com.

This document was produced by using OpenOffice.

Array as a column vector

```
x = zeros(5, 1);
```

x becomes a ***5*** x ***1*** matrix

```
x = [ 1; 2; 3; 4; 5 ];
```

5 consecutive variables

index	data
1	x(1) = 0
2	x(2) = 0
3	x(3) = 0
4	x(4) = 0
5	x(5) = 0

Accessing an element

```
x(1) = 1;
x(2) = 2;
x(3) = 3;
x(4) = 4;
x(5) = 5;
```

Cell Array as a column vector

x = cell(***5***, ***1***);

x becomes a ***5*** x ***1*** matrix cells
Each cell can be *different types*

x = { [1; 2]; “ab”; 4; 5; [7 8] };

5 consecutive variables

index	data
1	x{1} = []
2	x{2} = []
3	x{3} = []
4	x{4} = []
5	x{5} = []

Accessing an element

X{1} = [1; 2]
x{2} = “ab”
x{3} = 4
x{4} = 5
X{5} = [7 8]

Content Indexing and Cell Indexing

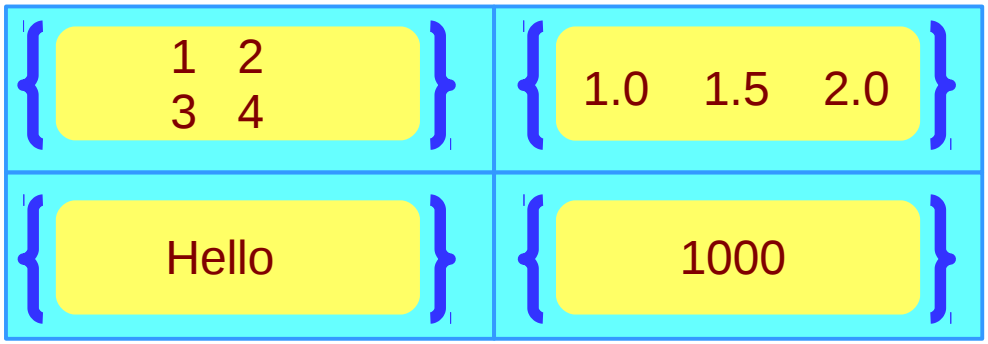
```
octave:6> A(1,1) = { [1, 2; 3, 4] };
octave:7> A(1,2) = { 'Hello' };
octave:8> A(2,1) = { 1 : 0.5 : 2 };
octave:9> A(2,2) = { 1000 };
octave:10>
octave:10> A
A =
{
  [1,1] =

     1   2
     3   4

  [2,1] =

     1.0000    1.5000    2.0000

  [1,2] = Hello
  [2,2] =  1000
}
```

Cell Indexing

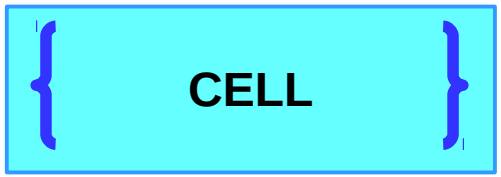
```
octave:11> A{1,1} = [1, 2; 3, 4];
octave:12> A{1,2} = 'Hello';
octave:13> A{2,1} = 1 : 0.5 : 2;
octave:14> A{2,2} = 1000;
octave:15>
octave:15> A
A =
{
  [1,1] =

     1   2
     3   4

  [2,1] =

     1.0000    1.5000    2.0000

  [1,2] = Hello
  [2,2] =  1000
}
```

Content Indexing

Contents and Cells (1)



Content



Contents and Cells (2)

Content Indexing

A{1, 1}

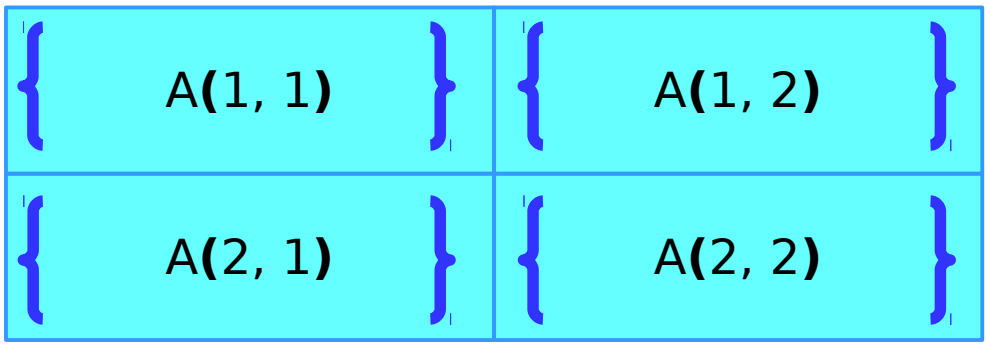
A{1, 2}

A{2, 1}

A{2, 2}

Content

Cell Indexing



CELL

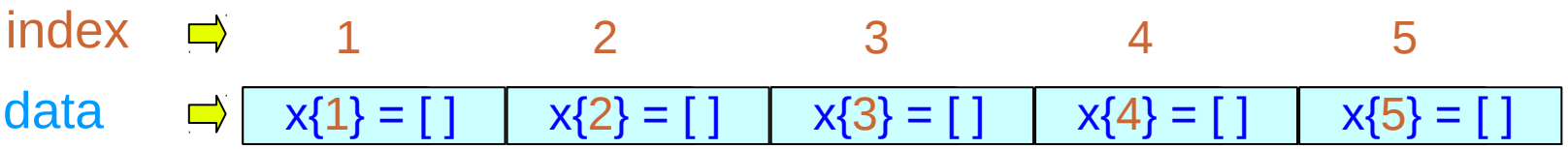
Cell Array as a row vector

x = cell(*1*, *5*);

x becomes a *1* x *5* matrix cells
Each cell can be *different types*

x = { [1; 2], “ab”, 4, 5, [7 8] };

5 consecutive variables



Accessing an element

x{1} = [1; 2]
x{2} = “ab”
x{3} = 4
x{4} = 5
x{5} = [7 8]

Cell Array v.s. Array

x = { [1; 2], “ab”, 4, 5, [7 8] }; different types

x{1}, x{2}, x{3}, x{4}, x{5}

y = [1, 2, 3, 4, 5]; the same type

y(1), y(2), y(3), y(4), y(5)

2-D Cell Array v.s. 2-DArray

```
x = {  1, "ab"  ;  2, "cd"  };
```

2-D cell array

```
X{1, 1}, x{1, 2}, x{2, 1}, x{2, 2}
```

```
y = [ 1, 2 ; 3, 4 ];
```

2-D array : matrix

```
y(1, 1), y(1, 2), y(2, 1), y(2, 2)
```

Nested Cell Array v.s. 2-D Array

x = { {1, “ab”}, {2, “cd”} };

2-d cell array

x{1}{1}, x{1}{2}, x{2}{1}, x{2}{2}

y = [[1, 2]; [3, 4]];

2-d array : matrix

y(1, 1), y(1, 2), y(2, 1), y(2, 2)

Multi-dimensional Cell Array v.s. Array

```
x = { 1, 2, { 3, 4,  { 5, 6 } } };
```

```
x =
{
  [1,1] =  1
  [1,2] =  2
  [1,3] =
  {
    [1,1] =  3
    [1,2] =  4
    [1,3] =
    {
      [1,1] =  5
      [1,2] =  6
    }
  }
}
```

```
y = [ 1, 2, [ 3, 4, [ 5, 6 ] ] ];
```

```
y =

   1   2   3   4   5   6
```

Indexing Cell Arrays

References

[1] Octave Manual