

Cell Arrays (1A)

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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

Accessing an element



1

x(1) = 0

x(1) = 1;

2

x(2) = 0

x(2) = 2;

3

x(3) = 0

x(3) = 3;

4

x(4) = 0

x(4) = 4;

5

x(5) = 0

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

Accessing an element



1

x{1} = []

X{1} = [1; 2]

2

x{2} = []

x{2} = "ab"

3

x{3} = []

x{3} = 4

4

x{4} = []

x{4} = 5

5

x{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)

{ 1 2 3 4 }	{ 1.0 1.5 2.0 }
{ Hello }	{ 1000 }

Content

CELL

Contents and Cells (2)

Content Indexing

$A\{1, 1\}$

$A\{1, 2\}$

$A\{2, 1\}$

$A\{2, 2\}$

Content

Cell Indexing

$A(1, 1)$

$A(1, 2)$

$A(2, 1)$

$A(2, 2)$

CELL

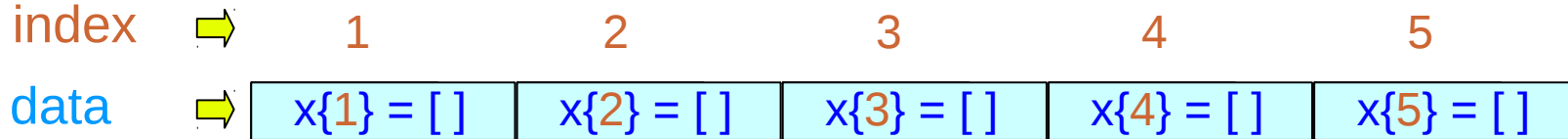
Cell Array as a row vector

```
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 } } };
```

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

```
y =
```

```
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  
    }  
  }  
}
```

Indexing Cell Arrays

References

- [1] Octave Manual