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ENG 101
Strings

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History: Early days of computing

Strings

A *string* is an array of characters

Strings have many uses in MATLAB

- Display text output
- Specify formatting for plots
- Input arguments for some functions
- Text input from user or data files

- Create a string by typing characters within single quotes (')

  - Many programming languages use the quotation mark (") for strings. Not MATLAB!
- Can have letters, digits, symbols, spaces
  - To type single quote in string, use two consecutive single quotes, e.g., make the string of English "Greg's car" by typing
    `'Greg''s car'`
  - Examples: `'ad ef'`, `'3%fr2'`, `'edcba:21!'`, `'MATLAB'`

Can assign string to a variable, just like numbers

```
>> name = 'Sting'
name =
     Sting
>> police = 'New York''s finest'
police =
     New York's finest
```

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- Numbers are stored as an array
- A one-line string is a row vector
  - Number of elements in vector is number of characters in string

```
>> name = 'Howard the Duck';
>> size( name )
ans =
    1 15
```

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Strings are indexed the same way as vectors and matrices

- Can read by index
- Can write by index
- Can delete by index

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Example

```
>> word = 'dale';
>> word(1)
ans = d
>> word(1) = 'v'
word = vale
>> word(end) = []
word = val
>> word(end+1:end+3) = 'ley'
word = valley
```

MATLAB stores strings with multiple lines as an array. This means each line must have the same number of columns (characters)

```
>> names = [ 'Greg'; 'John' ]
names =
     Greg
     John
>> size( names )
ans =
     2 4
```


Problem

4 characters *3 characters*

```
>> names = [ 'Greg'; 'Jon' ]???
Error using ==> vertcat
CAT arguments dimensions are not
consistent.
```

Must put in extra characters (usually spaces) by hand so that all rows have same number of characters

```
>> names = [ 'Greg'; 'Jon ' ]
     Greg
     Jon
```

Extra space

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Making sure each line of text has the same number of characters is a big pain. MATLAB solves problem with `char` function, which *pads* each line on the right with enough spaces so that all lines have the same number of characters

```
char('string 1', 'string 2', 'string 3')
```