

# Computing Fundamentals

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Strings in Octave/Matlab are represented as *arrays of characters*

- 1 Map between a value and a shape on screen;
- 2 Representation of characters with 8-bit integers;
- 3 Transformations: input/output;
- 4 Casting

```
>> uint8('A') % uint8 is an integer data type  
                % with values 0 - 255
```

```
ans = 65
```

```
>> char(100) % char is the character class
```

```
ans = d
```

```
>> char([97 98 99 100 101])
```

```
ans = abcde
```

```
>> double('fred')
```

```
ans = 102 114 101 100
```

```
>> fred = 'Fred'
```

```
fred = Fred
```

```
>> next = fred + 1
```

```
next = 71 115 102 101
```

```
>> a = uint8(fred)
```

```
a = 70 114 101 100
```

```
>> name = char(a + 1)
```

```
name = Gsfe
```

Since strings are arrays, normal array semantics for:

- Arithmetic and logical operations
- Concatenation
- Shortening
- Indexing
- Slicing

(use also the help command)

- `int2str`
- `num2str`
- `sprintf` format control: `%` introduces a conversion specification:
  - `%d` (integer),
  - `%f` (real),
  - `%g` (general),
  - `%c` (character) and
  - `%s`(string).

`\` introduces escape characters for format control. The most common: `\n` (new line) and `\t` (tab).

- `input`: waits for an expression then evaluates it (but if you specify a second argument keeps the string);
- `sscanf`: fine-grained control over the conversion (format specifiers similar to `sprintf`)
- `fprintf`
- `disp`

Strings are arrays, so direct comparison may fail:

- `strcmp`: lexicographic comparison between two strings;
- `strncpy`: lexicographic comparison between two strings limited to `N` characters;
- `strncmpi` Case-insensitive string comparison.

Also, `swtch` can be used with strings.



rot13: camouflage your message.  
Serious cryptography anyone?