Computing Fundamentals

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📖 Strings

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

Strings

```
>> 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
```

Strings

Since strings are arrays, normal array semantics for:

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

📖 Strings: conversion

(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: comparison

Strings are arrays, so direct comparison may fail:

- strcmp: lexicographic comparison between two strings;
- strcmpn: lexicographic comparison between two strings limited to N characters;
- strcmpi Case-insensitive string comparison.

Also, swtch can be used with strings.

Strings: exercise

rotn: camouflage your message.
Serious cryptography anyone?