

# Hashes and Regexp

Perl V & VI

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# Hashes

## Anatomy of a hash

A hash is technically a list, use parentheses...

...pairs separated by commas

```
my %hash = ( 'ATG' => 'Met',  
            'AAA' => 'Lys',  
            'CCA' => 'Pro' );
```

“KEY CCA is associated with VALUE Pro”

# Hashes

## Usage

### Arrays

### Hashes

As a list

```
@array
```

```
%hash
```

Get an element

```
$value = $array[$index]
```

```
$value = $hash{$key}
```

Assign an element

```
$array[$index] = $value
```

```
$hash{$key} = $value
```

Get length

```
scalar(@array)
```

```
scalar(keys(%hash))
```

# Hashes

## How it works

```
my $codon = "AAA";
```

```
my $value = $genetic_code{$codon} # returns VALUE "Lys"
```

```
( 'ATG' => 'Met',  
  'AAA' => 'Lys',  
  'CCA' => 'Pro' );
```

# About

## Nesting Functions

```
foreach my $codon (sort(keys(%genetic_code))) {  
    my $aa = $genetic_code{$codon};  
    print "$codon translates to $aa\n"  
}
```

keys(%genetic\_code) # returns an unnamed array of hash keys  
# containing ('ATG', 'AAA', 'CCA')

sort( ) # unnamed array is passed to sort and  
# sort creates a new, sorted unnamed  
# array containing ('AAA', 'ATG', 'CCA')

foreach my \$codon ( ) { # loops over new unnamed array  
 my \$aa = %genetic\_code{\$codon}; # using \$codon to access hash  
# by individual element  
 print "\$codon translates to \$aa\n";  
}

# About Nesting Functions

```
my $key = $array[$index];  
$hash{$key} = $value;
```

Can be combined in a nested statement...

```
$array[$index];  
↓  
$hash{ } = $value;
```

**...to become:**

```
$hash{$array[$index]} = $value;
```

# About “Offset”

**Offset: the distance to travel to another point, relative to the starting position.**

```
my $sequence =  
"ATGTGCATCATGCGATGTAGTGAA"  
my @sequence =
```

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | T | G | T | G | C | A | T | C | A | T | G | C | G | A | T | G | T | A | G | T | G | A | A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|