

# IT 240

# Shell Scripting for Administrators

## Chapter 6

## Hashes

Stan J. Senesy  
IT Program/CCS  
New Jersey Institute of Technology



# What is a Hash?

- A hash is a reference to a cell that holds a value of some type
- Hash references are computed using the value and some type of mathematical formula
- Hashes have no fixed order beyond the algorithm used to compute them



# Why Use Hashes?

- Hashes allow for fast, efficient searches for data
- The hash acts as an index, only requiring a single calculation (usually) to find data
- A hash may also be defined as a key pair based on 2 sets of related data



# Creating a Hash

- Accessing a hash element is easy:

*`$hash{$key}`*

- It looks the same as array access, but with the `{ }` instead of `[ ]`
- Some creation examples:

*`$family_name{"fred"} = "flintstone";`*

*`$family_name{"barney"} = "rubble";`*



# Using the Entire Hash

- We can access all of the hash elements by using the % as a prefix
- We can assign all the elements of the hash in this manner:  
`%some_hash = ("foo", 35, "bar", 12.4)`
- We can even convert the hash to a list:  
`@any_array = %some_hash;`
- When this is done, it's important to remember that the list will not be in the same order as the original hash



# Copying a Hash

- Hash's may be copied:

*%new\_hash = %old\_hash;*

- However, this is a computationally intensive operation and is discouraged
- A more common application is to manipulate the hash in some manner:

*%new\_hash = reverse %old\_hash;*



# Arrow Notation

- Sometimes it gets confusing which is a key and which is a value
- Perl supports arrow notation to clarify:  
*my %last\_name = ( "fred" => "flinstone" );*
- The left side is the key, the right is the value



# Hash Functions

- Keys function
  - Returns a list of all keys in the hash

*my @k = keys %hash;*

- Each function
  - Returns a key/value pair as a two element list

*(\$key, \$value) = each %hash;*



# Hash Functions

- Exists Function
  - Checks to see if a key exists in a hash  
*exists \$books{"dino"};*
- Delete Function
  - Removes a given key and it's paired value  
*delete \$books{"dino"}*