

Perl Short Course: Introduction

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- There are two good books describing Perl: Randal Schwartz's excellent introduction **Learning Perl** and Larry Wall and Randal Schwartz's rather more advanced **Programming Perl**.

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- Perl is an immensely pragmatic language, borrowing the best features from many other languages - forming a coherent whole, more powerful than the sum of its parts.
- Perl is known as the **Swiss Army Chainsaw** of programming; it makes *the easy tasks easy, the hard tasks possible*.

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- Most crucially, Perl does all **storage management** for us - just like **awk**, and **Java**, unlike **C**.
- Plus: threads, portable graphics, OOP, functional programming, network programming and more modules than you can count.

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- To do anything more complex, eg. multi-dimensional arrays, arrays of hashes, pointers to functions, Perl provides **references** - an ability for one variable to refer to another variable. Rather like pointers in C.

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 - Statement are terminated with semi-colons.
 - A string is placed in double quotes, and can contain C-style special characters such as \n.

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- Once again, we syntax check `eg2` and then run it.
- Was there anything that surprised you when the program ran?

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- How long would that have taken to write in C *and know it's bug-free?*

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- Syntax check, run it again a few times. Check it works.
- You may wish to try this with your own name instead..

- Let's just refresh our memories - the complete program is now:

```
#
# eg4: special case greeting
#
print "Please enter your name: ";
my $name = <STDIN>;
chomp $name;
$name = ucfirst(lc($name));
if( $name eq "Duncan" )
{
    print "\nwootcha Dunc mate!\n";
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- Replace the **if** line with:

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if( $name =~ /^Dun[ck]/ )
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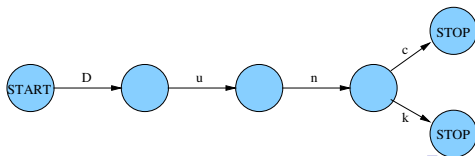
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- This is an example of matching a string against a *regular expression* - known as a *regex* - as found in the Unix filters **sed**, **grep** and **awk**.
- **regexes** are explained in more detail later, so for now let's just say that it succeeds if \$name starts with the string "Dun", immediately followed by *either* "c" or "k". Graphically:



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- This is an infinite **while** loop. Inside, we obtain a line of input, store it in \$guess and chomp it as usual.

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```
my $secretword = "Klingon";
```

- In the **else** part, add the following:

```
print "What is the secret word: ";
while(1)
{
    my $guess = <STDIN>;
    chomp $guess;
    last if $guess eq $secretword;
    print "Wrong - guess again: ";
}
```

- This is an infinite **while** loop. Inside, we obtain a line of input, store it in \$guess and chomp it as usual.
- We break out of the loop (**last**) if the guess is exactly the same as the secret word. If the guess is wrong, we continue round the loop. (Notice the **last if** alternative syntax).

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- But we didn't want to sequence through a list: We wanted a *set of secret words* and to test *set membership*.

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- Once you've got used to hashes, you never want to be without them! Many data structures you would build using pointers etc in C can be done with the combination of lists and hashes.

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- Replace the initialisation of the `$issecretword` elements with:

```
my $in = new IO::File( "secretwords" ) || die;
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 - While the file contains another line of text, read it.
 - Then we process the line - in this case, add the line to the `sethash`.
 - When we have read the last line from the file, quit the **while** loop and close the file.

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- Now, for the first time, we need two programs: one to initialise the DBM file, and our existing program (modified a bit) to read the DBM file:
- First, the creation program **mksecret** is as follows:

```
#
#      mksecret: create the secret words DBM file
#
dbmopen( my %secret, "secretwords", 0666 ) || die;
$secret{"Romulan"} = 1;
$secret{"Klingon"} = 1;
$secret{"Vulcan"} = 1;
dbmclose( %secret );
```

- Back in the main program - now called **eg10** - remove all the file reading code (up to `CLOSE(IN)`) and replace it with:

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- By using this highly efficient system, we get *persistent storage* for Perl programs, for free!
- This is an example of what I meant by leverage.

- Let's close by showing the final version **eg10**:

```

#
# eg10: secret words from a dbm file
#
dbmopen( my %issecretword, "secretwords", 0666 ) || die;

print "Please enter your name: ";
my $name = <STDIN>;
chomp $name;
$name = ucfirst( lc($name) );
if( $name =~ /^Dun[ck]/ )
{
    print "\nwotcha Dunc mate!\n";
} else
{
    print "\nhello $name!\n";
    print "Please enter one of the secret words: ";
    while(1)
    {
        my $guess = <STDIN>;
        chomp $guess;
        last if $issecretword{$guess};
        print "Wrong - guess again: ";
    }
}

dbmclose( %issecretword );

```