Week 11 Lab

Intro to Perl

Task 1. Perl types and truth values

Try to identify Perl scalars that are:

a) strings, defined, and true

b) strings, defined, and false

c) numbers, defined, and true

d) numbers, defined, and false

e) undefined and false

f) undefined and true

If you can't find an example of any one of these, see if you can determine whether that particular combination is impossible.

Task 2. Control structures and arithmetic

The value of π can be computed using the following infinite series:

$$\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + ...$$

Write a Perl script that computes the value of π accurate to five decimal places.

Task 3. $_

The following Perl code uses the implicit variable $_ in several places. Rewrite it, replacing all implicit variable references with an explicit one, i.e. a variable that has been declared.

```
#! /usr/bin/perl -w
while (<STDIN>) {
    if (80 < length) {
            print scalar reverse;
    }
    else {
        print;
    }
}
```

Task 4. Context

For each of the following, state whether the highlighted expression is being evaluated in scalar or list context, and what its value would be:

a) `print "Hello world!";`

b) `@a = (1, 2, 3);`

c) `@a = 1;`

d) `$a = sort @a;`

e) `$len = length $a;`

f) `$a = reverse $a;`

Task 5. Subroutines

Write a Perl subroutine whose arguments are a list of numbers, and returns the median[1] value of that set. Use your subroutine in a Perl script that takes numbers as command-line arguments and prints the median.

For example, if you've called your script median, then running

```
median 4 -3 2 6 4 1 -1
```

should result in your script printing

```
2
```

Task 6. Recursive subroutines

Write a Perl subroutine that recursively computes the factorial[2] of its single argument, which should be a number. Check your arguments!

Task 7. Perl standard library

Locate the documentation for the Perl library functions `opendir` and `readdir`. Use them to write a Perl script that prints the names of the files in the current directory.

[1] `https://www.mathsisfun.com/median.html`
[2] `https://www.mathsisfun.com/numbers/factorial.html`