

Note: This brief introduction is designed to introduce you to some of the functionality and syntax of Maple Programming. It is assumed that you are already familiar with the standard worksheet user interface and can utilize preprogrammed operations and packages already defined within Maple.

- We will begin by reviewing how to use “:=” to define expressions and functions.

Let’s try the following commands:

```
a := 5;  
a;  
b := a + 5;  
f := sin x;  
f( $\pi$ )  
g :=  $x^2 + 2x + 1$ ;  
g(1);
```

What happened?!? The problem is that we defined an expression rather than a function. Note that $f = \sin x$ worked because Maple recognizes $\sin x$ as a preprogrammed function, so sometimes we can get away with this while other times we cannot.

Try this:

```
g :=  $x \rightarrow x^2 + 2x + 1$ ;  
g(1);
```

- Next, we will look at how to use the “proc” command to define a new procedure. This command is the key component to Maple Programming.

Let’s use Maple to define a simple procedure called “double”:

```
double :=  
proc(a) local b; b := 2*a; evalf(b); end proc
```

Next, lets use this new operation to “double” a few numbers:

```
double(3);  
  
double(1.5);
```

In this example, we used “proc(a)” to begin defining a new procedure with one input a and we used “end proc” to end the procedure.

Within the procedure, we defined a single temporary, or “local” variable b which was used within the procedure but is forgotten once the procedure ends.

Let's try a slightly more complicated example:

```
weightavg :=  
proc(a, b, c) local r; r := (2*a + 2*b + 3*c)/7; evalf(r); end proc
```

Next, let's apply this operation to a few different inputs:

```
weightavg(2, 3, 4);
```

```
weightavg(4, 4, 4);
```

Note that the last input was a nice way of checking to see that our procedure is doing what it was designed to do.

- One particularly nice way to learn more about the functionality of Maple is to look at the code used to program one of the preprogrammed Maple procedures. You will quickly see that procedures can have many inputs, local variables, multiple steps and loops, etc.

The syntax used to ask Maple to print the code for a preprogrammed procedure is:

```
interface(verboseproc = 2):  
print(<name>);
```

Let's use this to take a look at the Maple code for: "ilcm", "floor", and "round"

- To learn more about Maple Programming, you can download both the Introductory and Advanced Programming guides from the Maplesoft Website. The link is as follows:

www.maplesoft.com/documentation_center/