with the extension .m. Examples:

Function definition line	File name
function [mpay,tpay] = loan(amount,rate,years)	loan.m
function [A] = RectArea(a,b)	RectArea.m
function [V, S] = SphereVolArea(r)	SphereVolArea.m
function trajectory(v,h,g)	trajectory.m

7.5 Using a User-Defined Function

A user-defined function is used in the same way as a built-in function. The function can be called from the Command Window, from a script file, or from another function. To use the function file, the folder where it is saved must either be in the current folder or be in the search path (see Sections 1.8.3 and 1.8.4).

A function can be used by assigning its output to a variable (or variables), as a part of a mathematical expression, as an argument in another function, or just by typing its name in the Command Window or in a script file. In all cases the user must know exactly what the input and output arguments are. An input argument can be a number, a computable expression, or a variable that has an assigned value. The arguments are assigned according to their position in the input and output argument lists in the function definition line.

Two of the ways that a function can be used are illustrated below with the user-defined `loan` function in Figure 7-2, which calculates the monthly and total payments (two output arguments) of a loan. The input arguments are the loan amount, annual interest rate, and the length (number of years) of the loan. In the first illustration the `loan` function is used with numbers as input arguments:

```
>> [month total]=loan(25000,7.5,4)
```

First argument is loan amount, second is interest rate, and third is number of years.

```
month =
        600.72
total =
      28834.47
```

In the second illustration the `loan` function is used with two pre-assigned variables and a number as the input arguments:

```
>> a=70000;  b=6.5;
>> [x y]=loan(a,b,30)
```

Define variables `a` and `b`.

Use `a`, `b`, and the number 30 for input arguments and `x` (monthly pay) and `y` (total pay) for output arguments.