Some Control Structures

Sometimes (as in Problem #4, page 13) you may need to construct MATHEMATICA programs in which the flow of control is affected by various values generated during the execution of a procedure or of the body of a loop. One way to do this, which fits in with functional programming ideas, is to use `Throw` and `Catch`. But MATHEMATICA also provides various functions for modifying the flow of control which work like languages such as C.

- `Break[]` exit the nearest enclosing loop
- `Continue[]` go to the next step in the current loop
- `Return[`*`expr`*`]` return the value *expr*, exiting all procedures and loops in a function
- `Goto[`*`name`*`]` go to the element `Label[`*`name`*`]` in the current procedure
- `Catch[`*`expr`*`]` evaluate *expr* until `Throw[`*`value`*`]` is encountered, then return *value*
- `Throw[`*`value`*`]` return *value* as the value of the nearest enclosing `Catch`

`Throw` and `Catch` provide a flexible way to control the process of evaluation in MATHEMATICA. The basic idea is that whenver a `Throw` is encountered, the evaluation that is then being done is stopped, and MATHEMATICA immediately returns to the nearest appropriate enclosing `Catch`.

Example

```
Mathematica 4.2 for Linux
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 -- Motif graphics initialized --

In[1]:= Catch[Do[Print[i];If[i>3,Throw[i]],{i,1,10}]]
1
2
3
4

Out[1]= 4
```