Discussion 7

Object Oriented Programming

OOP Reference:

This is **not** meant to teach you OOP – that’s what the OOP Above the line document is for. This is just a quick reference of the different constructs available to you and their syntax.

(define-class (<class-name> <var> …) <body>)

Creates a new class. (0 or more <instantiation-var>s can be given.)

<class-name> Name of the class.

<var> An instance variable whose initial value is given in the call to instantiate.

<body> The body – consists of a parent, an instance-vars, a class-vars, an initialize, a default-method, and (multiple) method clauses. All clauses are optional.

(parent (<class-name> <arg> …) …)

Used to specify the parent(s) of a class. (0 or more <arg>s can be given.)

1 or more parents can be given.

<class-name> The name of the parent class.

<arg> Any arguments needed to instantiate the parent class.

(instance-vars (<name> <expr>) …)

Specifies the instance variables for the class. Each object gets its own copy of these variables.

1 or more (<name> <expr>) pairs can be given.

<name> The name of the variable.

<expr> The expression which computes the initial value (when an object is constructed).

(class-vars (<name> <expr>) …)

Specifies the class variables for the class. All objects of the class share these variables.

1 or more (<name> <expr>) pairs can be given.

<name> The name of the variable.

<expr> The expression which computes the initial value (when the class is defined).

(initialize <expr> …)

Specifies the expression(s) that should be evaluated whenever a new object is created. (1 or more <expr>s can be given.)

<expr> The expression to evaluate when an object is constructed.

(method (<name> <arg> …) <body>)

Creates a method. The syntax is analogous to that of define. (0 or more <arg>s can be given.)

<name> Name of the method.

<arg> An argument of the method.

<body> Body of the method.

(default-method <expr> …)

Creates the default method. When called, message is bound to the message, and args is bound to the list of arguments. (1 or more <expr>s can be given.)

<expr> An expression in the body of the method. Can use variables message and args.

(usual <message> <arg> …)

Sends <message> to the parent, along with associated arguments. Causes the parent class’s associated method or default-method to be invoked. (0 or more <arg>s can be given.)

<message> Message to the parent

<arg> Argument to be supplied with the message

(instantiate <class> <arg> …)

Creates a new object of the appropriate class. (0 or more <arg>s can be given.)

<class> Class of the object to be constructed

<arg> Argument for an instantiation variable in the class.

(ask <object> <message> <arg> …)

Sends a message to an object along with necessary arguments. (0 or more <arg>s can be given.)

<object> Object to which the message is sent

<message> Message to send (i.e. which method to invoke).

<arg> Argument for the method.