Writing an Ice Application with Ruby

This page shows how to create an Ice client application with Ruby.

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Compiling a Slice Definition for Ruby

The first step in creating our Ruby application is to compile our Slice definition to generate Ruby proxies. You can compile the definition as follows:

\$ slice2rb Printer.ice

Whenever we show Unix commands, we assume a Bourne or Bash shell. The commands for Windows are essentially identical and therefore not shown.

The slice2rb compiler produces a single source file, Printer.rb, from this definition. The exact contents of the source file do not concern us for now — it contains the generated code that corresponds to the Printer interface we defined in Printer.ice.

Writing a Client in Ruby

The client code, in Client.rb, is shown below in full:

Ruby

```
require 'Printer.rb'
status = 0
ic = nil
begin
   ic = Ice::initialize(ARGV)
   base = ic.stringToProxy("SimplePrinter:default -p 10000")
   printer = Demo::PrinterPrx::checkedCast(base)
   if not printer
       raise "Invalid proxy"
    end
   printer.printString("Hello World!")
rescue
   puts $!
    puts $!.backtrace.join("\n")
    status = 1
end
if ic
    # Clean up
   begin
        ic.destroy()
    rescue
        puts $!
        puts $!.backtrace.join("\n")
        status = 1
    end
end
exit(status)
```

The program begins with a require statement, which loads the Ruby code we generated from our Slice definition in the previous section. It is not necessary for the client to explicitly load the Ice module because Printer.rb does that for you.

The body of the main program contains a begin block in which we place all the client code, followed by a rescue block. The rescue block catches all exceptions that may be thrown by the code; the intent is that, if the code encounters an unexpected run-time exception anywhere, the stack is unwound all the way back to the main program, which prints the exception and then returns failure to the operating system.

The body of our begin block goes through the following steps:

- 1. We initialize the lce run time by calling Ice::initialize. (We pass ARGV to this call because the client may have command-line arguments that are of interest to the run time; for this example, the client does not require any command-line arguments.) The call to initia lize returns an Ice::Communicator reference, which is the main object in the lce run time.
- 2. The next step is to obtain a proxy for the remote printer. We create a proxy by calling stringToProxy on the communicator, with the string "SimplePrinter:default -p 10000". Note that the string contains the object identity and the port number that were used by the server. (Obviously, hard-coding object identities and port numbers into our applications is a bad idea, but it will do for now; we will see more architecturally sound ways of doing this when we discuss IceGrid.)
- 3. The proxy returned by stringToProxy is of type Ice::ObjectPrx, which is at the root of the inheritance tree for interfaces and classes. But to actually talk to our printer, we need a proxy for a Demo::Printer interface, not an Object interface. To do this, we need to do a down-cast by calling Demo::PrinterPrx::checkedCast. A checked cast sends a message to the server, effectively asking "is this a proxy for a Demo::Printerinterface?" If so, the call returns a proxy of type Demo::PrinterPrx; otherwise, if the proxy denotes an interface of some other type, the call returns nil.
- 4. We test that the down-cast succeeded and, if not, throw an error message that terminates the client.
- 5. We now have a live proxy in our address space and can call the printString method, passing it the time-honored "Hello World!" string. The server prints that string on its terminal.

Before the code exits, it destroys the communicator (if one was created successfully). Doing this is essential in order to correctly finalize the Ice run time: the program *must* call destroy on any communicator it has created; otherwise, undefined behavior results.

Running the Client in Ruby

The server must be started before the client. Since Ice for Ruby does not support server-side behavior, we need to use a server from another language mapping. In this case, we will use the C++ server:

\$ server

At this point, we won't see anything because the server simply waits for a client to connect to it. We run the client in a different window:

```
$ ruby Client.rb
$
```

The client runs and exits without producing any output; however, in the server window, we see the "Hello World!" that is produced by the printer. To get rid of the server, we interrupt it on the command line.

If anything goes wrong, the client will print an error message. For example, if we run the client without having first started the server, we get something like the following:

```
exception ::Ice::ConnectionRefusedException
{
    error = 111
}
```

Note that, to successfully run the client, the Ruby interpreter must be able to locate the Ice extension for Ruby. See the Ice for Ruby installation instructions for more information.

See Also

- Client-Side Slice-to-Ruby Mapping
- IceGrid