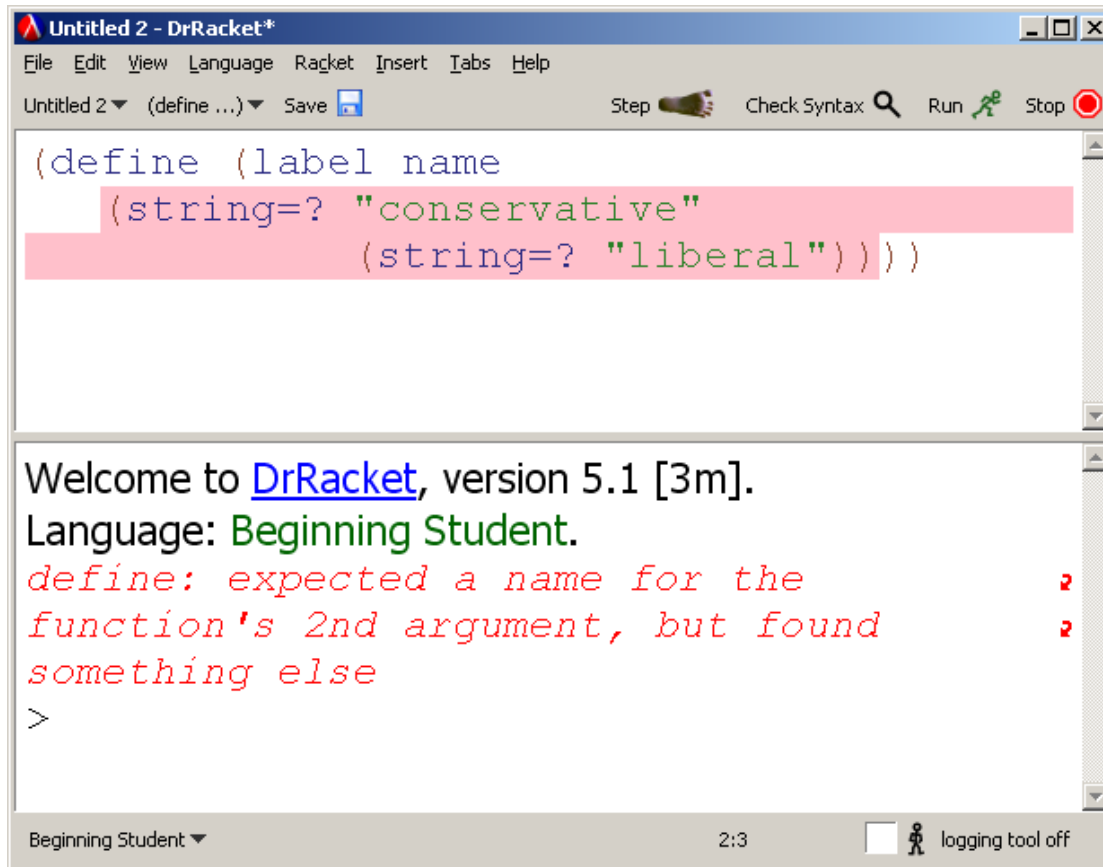


Improving Error Messages



The screenshot shows the DrRacket IDE with a file named "Untitled 2 - DrRacket*". The menu bar includes File, Edit, View, Language, Racket, Insert, Tabs, and Help. The toolbar has buttons for Step, Check Syntax, Run, and Stop. The code editor contains the following Racket code:

```
(define (label name
  (string=? "conservative"
    (string=? "liberal"))))
```

The error message in the bottom pane reads:

```
Welcome to DrRacket, version 5.1 [3m].
Language: Beginning Student.
define: expected a name for the
function's 2nd argument, but found
something else
>
```

The status bar at the bottom shows "Beginning Student", "2:3", and a "logging tool off" button.

Current messages highlight a fragment related to a textual description ...

What the highlight references isn't always clear to a novice: is "function" here label or string=?

```
(define (string-one-of? check-for-match stringOne stringTwo stringThree)
  cond [(and (string=? check-for-match stringOne))]
        [(and (string=? check-for-match stringTwo))]
        [(and (string=? check-for-match stringThree))])
```

↪ *define: expected only one expression for the function body,
but found at least one extra part*

Problem here is missing (before cond, but
highlight can suggest “edit here”

Goal: improve the wording and GUI for error messages

Proposal: Multi-colored highlights

Highlight each definite noun to clarify how text relates to the code

```
(define (label-near1? label name word)
  (cond [(or (string=? label word word word name)
             (string=? name word word word label)) true]))

(label-near1? name word)
```

Welcome to [DrScheme](#), version 4.2.2 [3m].

Language: **Beginning Student**; memory limit: 128 megabytes.

label-near1?: this procedure expects 3 arguments, here it is provided 2 arguments

Want to do studies with real users on the impact of this

Readings

- [*Measuring the Effectiveness of Error Messages Designed for Novice Programmers*](#). Guillaume Marceau, Kathi Fisler, Shriram Krishnamurthi. ACM SIGCSE 2011
- [*Mind Your Language: On Novices' Interactions with Error Messages*](#). Guillaume Marceau, Kathi Fisler, and Shriram Krishnamurthi. OOPSLA Onward 2011
- Design specification in [GitHub/designdocs/errors](#)