NPRG005 Project Proposal: Alonzo

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Alonzo is an interactive interpreter that performs normal-order β-reduction on expressions in the λ-calculus. Users will be able to interact with Alonzo via a read-eval-print loop where names can be assigned to λ-terms. The end result will look something like this:

```
]=> TRUE = \p.\q.p
TRUE = \p.\q.p
]=> FALSE := \p.\q.q
FALSE = \p.\q.q
]=> AND = \p.\q.p q p
AND = \p.\q.p q p
]=> AND TRUE FALSE
\p.\q.q (FALSE)
```

Alonzo stores the de Bruijn indices of the terms it has seen, along with the names they are bound to. After evaluating a term, it checks to see if it has seen the term before. This is how it knows in the above example that `AND TRUE FALSE` evaluates to `FALSE`.