

```

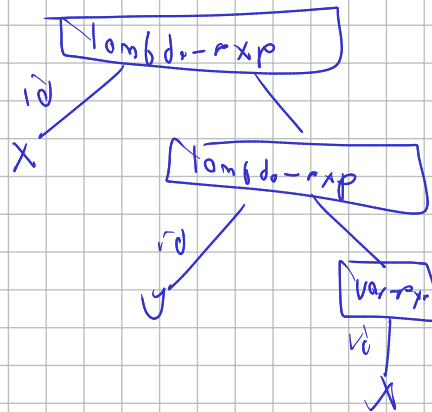
<lc-exp> ::= <identificador>
           var-exp(id)
           ::= "lambda" "(" <identificador> ")" <lc-exp>
           lambda-exp(id, exp)
           ::= "(" <lc-exp> <lc-exp> ")"
           app-exp(rator, rand)

```

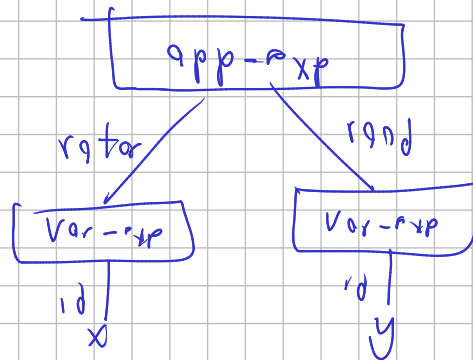
$x$   
 $\lambda(x) \lambda(y) z$   
 $(x \ y)$

$x$   
 $\lambda(x) \lambda(y) z$   
 $(x \ y)$

$\lambda(x) \lambda(y) z$   
 $(x \ y)$



$(x \ y)$



Los tipos de datos definidos recursivamente se pueden trabajar con AST (Arboles de Sintaxis abstracta)

```

(define-datatype <tipo> <predicado>
  (<variante> (nombre tipo) (nombre tipo) ...)
)

```

```

<lc-exp> ::= <identificador>
           var-exp(id)
           ::= "lambda" "(" <identificador> ")" <lc-exp>
           lambda-exp(id, exp)
           ::= "(" <lc-exp> <lc-exp> ")"
           app-exp(rator, rand)

```

```

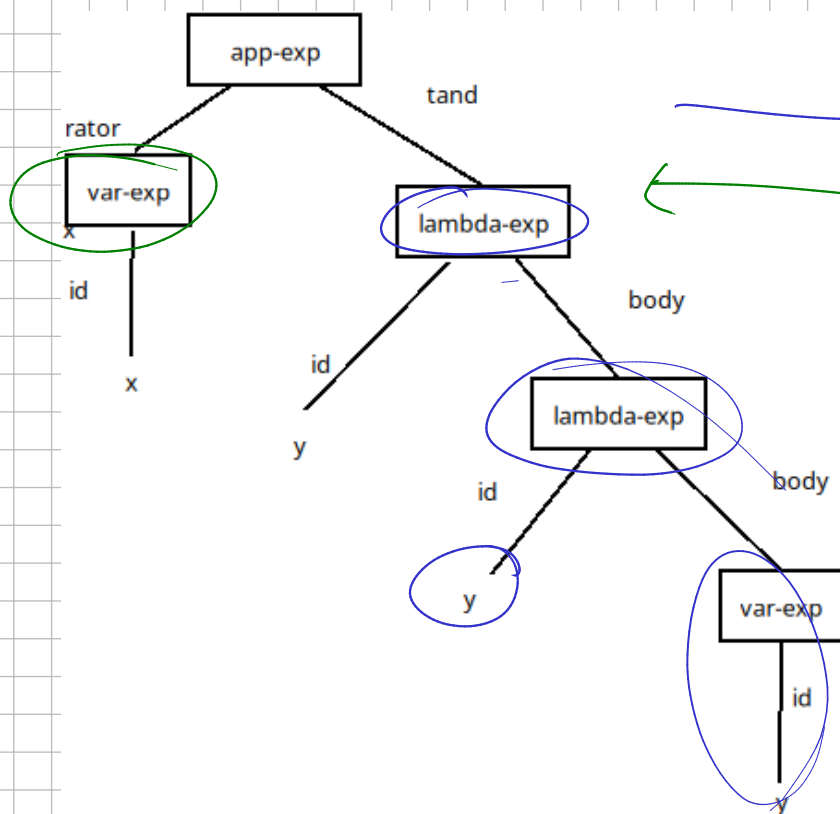
(define-datatype lc-exp lc-exp?
  (var-exp (id symbol?))
  (lambda-exp (id symbol?)
               (exp lc-exp?))
  (app-exp (rator lc-exp?)
            (rand lc-exp?))
)

```

## Parser y unparser

Parser: sintaxis concreta (codigo fuente) => AST

Unparser: AST => sintaxis concreta (entendible por un programador)



Unparser

$$\begin{aligned}
 &\downarrow \quad \downarrow \\
 &\underline{(x)} \quad \underline{(\text{lambda } (y))} \\
 &\quad \quad \underline{(\text{lambda } (y) \quad y))}
 \end{aligned}$$