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A Crash Course in LISP MNFIT272 – 2002

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What are the topics for this crash course?





















- Overview
- Symbol manipulation





















- Overview
- Symbol manipulation
- LISP























- Overview
- Symbol manipulation
- LISP
 - Data























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 - Functions























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 - Recursion























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 - Assignment























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 - Functional programming





















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 - Iteration













































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- LISP has the easiest syntax of all languages
- LISP is oriented towards the manipulation of symbols
- LISP is very flexible in that users can change the syntax of the language if they don't like it







































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```
(defun sum (n)
      (let ((s 0))
            (dotimes (i n s)
      (incf s i))))
```





















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 - is (+ 10 15) a program or data?





LISP

Data























LISP

Data

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```
- (defun ask (string)
       (format t '' A'' string)
       (read))
```













































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```
(defun len (lst)
      (if (null lst) 0
           (+ (len (cdr lst)) 1)))
> (len '(a b c d))
4
```

- Recursive functions can be used for more complex problems: (defun fibonacci (x)

```
(if (<= x 2) 1
     (+ (fibonacci (- x 2))(fibonacci (1- x)))) > (fibonacci
```

55

10)





































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```
(defun showvar (x y)
     (setf var x)
     (let ((var y))
          (print var))
     (print var)
    t)
```



















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```

2. Using the let construction (defun showvar (x y) (setf var x) (let ((var y)) (print var)) (print var) t) > (showvar 10 5) 5 10

• For global parameters use defparameter or defconstant





















t

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- For global parameters use defparameter or defconstant
 - (defparameter *global* 100)









































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- If you want to write destructive code you can do:
 - > (setf lst (remove 'l lst))





































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- It can sometimes be more natural repeat a procedure in an interactive way, as compared to a recursive way
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```
(defun lenit (lst)
     (let ((len 0))
          (dolist (obj lst) (setf len (+ len 1))) len))
> (lenit '(a b c d))
4
```















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```
> (write2 '(a b c d e))
(a b c b a)
(e d c b a)
```





































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- 4. type <esc>-x lisp-mode
- 5. You can now write your lisp code in one window, and compile it with <ctrl>-x



















Litterature

LISP 3rd edition
 Patrick Henry Winston
 Berthold Klaus Paul Horn

ISBN: 0-201-08379-1

ANSI Common Lisp

Paul Graham

ISBN: 0-13-370875-6

• Common Lisp the Language, 2nd edition

Guy L. Steel

ISBN: 1-55558-041-6

http://www.math.uio.no/cltl/cltl2.html





















