PPL Lab Assignment 6

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- Problem Statement : Execution of Basic Lisp Commands.

- FAQs:

1. Explain what is LISP? Give an example of some of the popular applications built in LISP?

> Lisp is a family of programming languages with a long history and a distinctive, fully parenthesized prefix notation. Lisp is the second-oldest high-level programming language in widespread use today.

Popular applications built in Lisp are Emacs, G2, AutoCad, Igor Engraver, Yahoo Store etc.

2. Explain what is a predicate in LISP?

> A predicate is a function that tests for some condition involving its arguments and returns nil if the condition is false, or some non-nil value if the condition is true.

3. How data types are categorized in LISP?

> LISP data types can be categorized as.

- Scalar types - for example, number types, characters, symbols etc.
- Data structures - for example, lists, vectors, bit-vectors, and strings.

4. What is the programming structure for LISP?

> LISP expressions are called symbolic expressions or s-expressions. The s-expressions are composed of three valid objects, atoms, lists and strings.

Any s-expression is a valid program.

LISP programs run either on an interpreter or as compiled code.

The interpreter checks the source code in a repeated loop, which is also called the read-evaluate-print loop (REPL). It reads the program code, evaluates it, and prints the values returned by the program.

5. What is meant by symbolic expression in LISP?

> LISP expressions are called symbolic expressions or s-expressions.

6. Compare Lisp with Haskell programming language.

> Haskell is purely functional, whereas (Common) Lisp is very much the epitome of unopinionated multi-paradigm languages. That difference is a little less pronounced when you consider lisps like Clojure, which are not purely functional, but are strongly opinionated about being functional.

- Conclusion : We have studied and executed basic lisp commands.

- Practice Assignments :

1. Write a program that prints "Hello World" to the screen.

2. Write a lisp function to perform addition of two numbers.

3. Write a lisp function to calculate the cube of number.

4. Write a lisp function to which returns maximum of three numbers.

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; PRACTICE PROBLEMS

; 1. Write a program that prints ‘Hello World’ to the screen.

(print "Hello World")
(terpri)

; 2. Write a lisp function to perform addition of two numbers.

(princ " > Enter First Number : ")
(setq a (read))
(princ " > Enter Second Number : ")
(setq b (read))
(print(+ a b))
(terpri)

; 3. Write a lisp function to calculate the cube of number.

(princ " > Enter Number to cube : ")
(setq c (read))
(print(* c c c))
(terpri)

; 4. Write a lisp function to which returns maximum of three
numbers.

(defun getMax(x y z) (if (and(> x y)(> x z)) x (if (and(> y
x)(> y z)) y (if (and(> z x)(> z y)) z 'equal))))

(princ " > Enter First Number : ")
(setq d (read))
(princ " > Enter Second Number : ")
(setq e (read))
(princ " > Enter Third Number : ")
(setq f (read))

(print(getMax d e f ))
(terpri)
```

>
u0_a362@localhost:~/github/assignments/PPL$ ecl --load ppl_assignment_6.lisp

;;; Loading "/storage/emulated/0/github/assignments/PPL/ppl_assignment_6.lisp"

"Hello World"
 > Enter First Number : 67
 > Enter Second Number : 43

110
 > Enter Number to cube : 3

27
 > Enter First Number : 32
 > Enter Second Number : 49
 > Enter Third Number : 62

62
ECL (Embeddable Common-Lisp) 20.4.24 (git:UNKNOWN)
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Type :h for Help.
Top level in: #<process TOP-LEVEL 0x78d9f9bf80>.
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