# ARTIFICIAL INTELLIGENCE LAB

## KCS – 751A

### DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

**United College of Engineering and Management, Naini, Prayagraj**
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| Branch/Sem | ---------- |
| Session | ODD 2021-22 |

# SYLLABUS FOR ARTIFICIAL INTELLIGENCE LAB

# (KCS-751A)

The following programs may be developed –

1. Study of Prolog.
2. Write simple fact for the statements using PROLOG.
3. Write predicates One converts centigrade temperatures to Fahrenheit, the other checks if a temperature is below freezing.
4. Write a program to solve the Monkey Banana problem.
5. WAP in turbo prolog for medical diagnosis and show the advantage and disadvantage of green and red cuts.
6. WAP to implement factorial, fibonacci of a given number.
7. Write a program to solve 4-Queen problem.
8. Write a program to solve traveling salesman problem.
9. Write a program to solve water jug problem using LISP

# STUDY AND EVALUATION SCHEME OF KCS-751A LABORATORY

**Total No. Of Periods : 2 Periods per week**

**EVALUATION:**

**TOTAL INTERNAL MARKS: 25 MARKS**

**END SEMESTER EXAM : 25 MARKS**

**TOTAL MARKS : 50 MARKS**

**CREDIT : 1**

# List Of Experiments:-

1) WAP in LISP to convert a centigrade temperature to Fahrenheit temperature.
2) WAP in LISP using a function named 'rotate' that takes a list and rotates the elements by one position. For ex., (rotate '(a b c d)) returns (d a b c).
3) WAP in LISP using a function 'rev1' which takes a list and returns the list in reverse order. Do not use the reverse function defined in LISP.
   For ex., (rev1 '(a b c d)) returns (d c b a).
4) WAP in LISP using an iterative function named 'sumall' using 'do loop' that takes an integer 'n' as argument and returns the sum of the integers from 1 to n. For ex., (sumall 5) should return 15.
5) WAP in LISP to find the factorial of a number using recursive function.
6) WAP in LISP to find the factorial of a number using non-recursive function.
7) WAP in LISP to find the largest of three numbers.

# INDEX

# Program – 1

## Objective:-

WAP in LISP to convert a centigrade temperature to Fahrenheit temperature

## Solution:

```
(defun f-to-c ()
        (format t "~%Please enter Fahrenheit temperature: ")
        (let*
                (
                        (ftemp (read))
        (ctemp (* (- ftemp 32) 5/9))
                )
        (format t
       "%~s degrees Fahrenheit is ~s degrees Celsius%"
                        ftemp
       (float ctemp)
                )                ;; print floated value
        ctemp  ;; return ration value
        )
)
```

# Program – 2

## Objective:-

WAP in LISP using a function named ‘rotate’ that takes a list and rotates the elements by one position. For ex., (rotate ‘(a b c d)) returns (d a b c).

## Solution:

```
Lisp-> (rotate-left ‘(a b c))
(b c a)
Lisp-> (rotate-left (rotate-left ‘(a b c)))
(c a b)

(pprint (function-lambda-expression #'rotate-left))
(LAMBDA (LIS)
 (APPEND (CDR LIS) (LIST (CAR LIS))))
        > (rotate-left '(a b c))
        (B C A)
        > (rotate-left '())
        (NIL)
        > (rotate-left '(a b))
(B A)
```

# Program – 3

## Objective:-

WAP in LISP using a function ‘rev1’ which takes a list and returns the list in reverse order . Do not use the reverse function defined in LISP. For ex, (rev1 ‘(a b c d)) returns (d c b a).

## Solution:

```
(defun revert (l)
 (if (null l)
   nil
   (append (revert (cdr l)) (list (car l)))))
```

# Program – 4

## Objective:-

WAP in LISP using an iterative function named 'sumall' using 'do loop' that takes an integer 'n' as argument and returns the sum of the integers from 1 to n. For ex., (sumall 5) should return 15.

## Solution:

```
(doloop n 5)
(loop
        setq sum (+ sum i))
        (when (< i  n)
)
(print sum)
```

# Program – 5

## Objective:-

WAP in LISP to find the factorial of a number using recursive function.

## Solution:

```
(defun fact(n)
        (if (= n 1)
                1
                (* n (fact (- n 1)))))
```

# Program – 6

## Objective:-

WAP in LISP to find the factorial of a number using recursive function.

## Solution:

```
(defun factorial (n)
 (if (= n 0)
    1
    (* n (factorial (- n 1))) ) )

(loop for i from 0 to 16
  do (format t "D! = ~D%" i (factorial i)) )
```

# Program – 7

## Objective:-

WAP in LISP to find the largest of three numbers.

## Solution:

```
(defun max3(a b c)
   (cond((>a b) (cond((>a c)
                  (format t "Max ~a"
                   (t(format t "Max ~a"
               ((>b c> (format t "Max ~a"
                     (t format t "MAX ~a" c))))
```