CS3723 Pgm2 Lisp (20 points)

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Code the functions listed below and use the specified test cases. If you cheat on this assignment, you will most likely do poorly with the LISP coding on the final exam.

Notes:

* Look at the set up information for more information on executing LISP files.
* The **only** functions you can use are those we discussed in the LISP notes (including ones we developed as exercises) and you can reuse any of the functions developed below in subsequent functions.
* Place your code in p2Lisp.txt.
* Load your code using (load "p2Lisp.txt" :echo T :print T).
* To execute the test cases using the file I provided:  
  (load "p2LispRun.txt" :echo T :print T)
* Your functions must be executed on a **fox** server using the specified test cases.
* ﻿Turn in a zip file named LastNameFirstName.zip(no spaces) containing:
  + Your source LISP code (p2Lisp.txt)
  + Your log o﻿f the session. Select all the text in the terminal window and paste it into a file named p2Out.txt
* Your code must follow my **LISP programming standards** which are on my website for this course.

1. Code the function (**skipN** *list N*) which constructs a new list by skipping the first N values (relative to 1).

Example:

> (**skipN** '(T I S S U E) 3)

(S U E)

> (skipN '(T I S S U E) 8)

NIL

2. Code the function (**replaceIn** *list possibleList* *repValue*) which constructs a new list. It examines *list* for occurrences of any of the atoms from the *possibleList*. Those are replaced with *repValue.* This only examines the top-level items in *list*.

Example:

> (**replaceIn** '(P A T T E R) '(T R) 'S)

(P A S S E S)

3. Code the function (**insertAfter** *list atm* *insValue*) which constructs a new list by inserting the specified *insValue* into the list after each top-level occurrence of the specified *atm*.

Example:

> (insertAfter '(H O H O) 'H 'X)

(H X O H X O)

> (insertAfter '(H O H O) 'W 'X)

(H O H O)

4. Code the function (**insertNth** *list N* *insValue*) which constructs a new list by inserting the specified *insValue* into the list after the Nth top-level value (relative to 1).

Example:

> (insertNth '(X Y Z) 2 'FUN)

(X Y FUN Z)

> (insertNth '(X Y Z) 4 'FUN)

(X Y Z)

5. Code the function (**insertAfterAll** *list atm* *insValue*) which constructs a new list by inserting the specified *insValue* into the list after all occurrences of the specified *atm*. This includes any level of nesting.

Example:

> (insertAfterAll '(X (X Y X) X Z) 'X 'W)

(X W (X W Y X W) X W Z)

> (insertAfterAll '((X (X (Y X)) X) Z) 'X 'W)

((X W (X W (Y X W)) X W) Z)

6. Code the function, (**atomicList** *list*), which is passed a list that can have embedded lists. It should return a list of atoms that occur anywhere in the list regardless of nesting.

Hint: APPEND can be useful.

Examples:

> (atomiclist '(A (B F (H) G) J))

(A B F H G J)

> (atomiclist '(L () (I () S) (((P ()))) ))

(L NIL I NIL S P NIL)