

Linked List

Time Span: 1 lab day (a week)

Problem: Write a C program to represent a character string in a linked list.

Description:

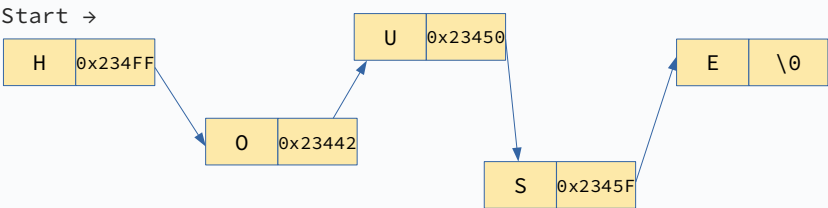
Suppose that a character string is represented by a linked list of single characters. The array representation of a string in C including the termination ‘\0’ is shown below.

```
char word[] = "HOUSE";
```

Index

0	1	2	3	4	5
H	O	U	S	E	\0

The Linked List representation of the above string would be:



Write a set of routines to manipulate such lists as follows.

Solution:

- 1. `strcnval(str)` to convert the character string to a linked list. This function returns a pointer to a header(start) node. During conversion, implement insert operation of dynamic list.
- 2. `strcnvla(start)` to convert the given character linked list to a character string in an array.

3. `strsubl(start, from, to)` to extract the sub-string part of the given start point of the Linked List. The variables from and to are the indices specifying for the sub-string.

An example, `strsubl("qwert", 1, 3)` gives "wer" i.e. 3 character from position 1.

4. `ziplll(start1, start2)` combines the two linked lists `start1` and `start2` resulting the linked list as shown below:

```
start1 >> [1] → [2] → [3] → [4] → [5] → [\0]
start2 >> [1] → [2] → [5] → [\0]
result >> [11] → [22] → [35] → [\0]
```

Assumptions:

Make your necessary assumptions for representation of character linked list and the final multiple character arrays in solution 4.
