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APCS – CLC
COURSE: **CS162 – KTLT**
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WEEK 04

SINGLY LINKED LIST

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1 Problems

1.1 Problem 1

1. Given a linked list of integers sorted from smallest to largest (head to end). Insert a new integer into the linked list so that it remains sorted.
2. Given a linked list, ***in***, create a new linked list, ***out***, of the same length, such the node *i* of the ***out*** contains the sum of the data in ***in***'s nodes up to and including node *i* of list ***in***.
3. Given a linked list, re-arrange its nodes into two lists: <1st node, 3rd node, 5th node...> and <2nd node, 4th node, 6th node...>. Do not allocate any new nodes.
4. Given two linked lists, combine their nodes so that the nodes of the new list alternate between those of the two original nodes: <1st node of 1st list, 1st node of 2nd list, 2nd node of 1st list, 2nd node of 2nd list...>. Do not allocate any new nodes.
5. Given the two linked lists, headed by left and right, set the last linked of the left list to point to the right list, thus joining them into one list. Do not allocate any new nodes.
6. Given a linked list of integers from 0 to 9 (inclusive), representing a non-negative integer in decimal, compute into an unsigned variable, the integer that the list represents.
7. Given a non-negative integer, create a linked list of integers between 0 and 9, representing the integer. 0 is represented by an empty list.

1.2 Problem 2

You are asked to write a program managing a bookstore. Each book has the following information:

- Title: the title of the book (maximum 200 characters)
 - ISBN: the ID of the book (10 characters)
 - Author: the name of the author (maximum 40 characters)
 - Language: the language of the book (maximum 30 characters)
 - Year Published: the year it was published
 - Price: the price of the book (in dollars).
 - Stock level: in integer number representing the stock level of the book.
1. Initialization: start the bookstore with zero book.
 2. Input a book with all details into the bookstore. If this book has existed in the store, update its stock level.

3. Sell a book: input an ISBN, print out the name and the price of the book. Then, reduce the number of stock level of that book. If the book is out of stock (i.e. level is zero), print out “OUT OF STOCK.”
4. Find a book: input the name, print all the books (ISBN and title) whose titles contain the name as a subset.
5. Remove all book whose stock level is less than a threshold k.

1 A05

Problem 2

2 H05

Problem 1, 2

3 H05 – Special

Problem 1, 2