CSE291 Data Structures Lab

Lab Sheet 8

Periodical I and II Questions

---

1. Write a program to add two polynomial using linked list.

(Hint: A node of the form

Coefficient of the term	Power of x	Link to next node

)

2. Write a simple airline ticket reservation program. The program should display a menu driven for the following option.
   1. Reserve a ticket.
   2. Cancel a ticket.
   3. Display whether a ticket is reserved for particular person.
   4. Display the passengers.

   The information is maintained on an alphabetized linked list of names (name, age, Date of reservation). Create a linked list with each node including a pointer to the linked list of passengers. Assume that there is only one flight.

3. Write a program to count the duplicates in a linked list and eliminate the duplicates.

   Input :

   10→15→10→13→13→14

   Output :

   10 2
   13 2
   10→15→13→14

4. A new identification number is given for every Citizen of the Country Utopia and it has the following format.

1. The string must begin with between 0 and 3 (inclusive) lowercase letters.
2. Immediately following the letters, there must be a sequence of digits. The length of this segment must be between 2 and 8, both inclusive.
3. Immediately following the numbers, there must be at least 3 uppercase letters.

Your task is to find out if a given identification number is valid or not.

Input Format:
The first line contains N, N lines follow each line containing an identification number.

Output Format:

For every identification number, please print "VALID", if the identification number is valid and print "INVALID" otherwise.

5. Write a program to checks if any of the numbers in stack is the square root of any other number in the stack.

6. Given a linked list and two keys in it, swap nodes for two given keys. Nodes should be swapped by **changing links**.
It may be assumed that all keys in linked list are distinct.
Input :

10→15→12→13→20→14 , x=12 , y=20
Output :

10→15→20→13→12→14

Input:

10→15→12→13→20→14, x = 10, y = 20
Output:

20→15→12→13→10→14

7. Given a linked list with n values. Write a C++ program to reverse every three values in it.

Input:

1->2->3->4->5->6->7->8

Output:

3->2->1->6->5->4->7>8

8. DS Lab Exam is conducted for s4 BTech students. The external examiner who came for viva told the internal faculty that he wants to conduct viva based on roll numbers. But he insisted one condition that he wants to meet one boy and one girl alternatively. He also insisted that he will meet a boy first. Write a C++ program to help the internal faculty to sort them according to roll numbers. (Choose an appropriate data structure).

The input to the program looks like this (the first line is the total number of students):
16
G 12
G 8
G 25
G 19
B 9
B 24
B 13
B 14
G 61
G 35
G 37
G 56
B 20
B 28
B 32
B 48
The output will look like this:
B 9
G 8
B 13
G 12
B 14
G 19
B 20
G 25
B 24
G 35
B 28
G 37
B 32
G 56
B 48
G 61
