Homework Assignment

Class:	CS202	**Semester:**	Fall 2019
Assignment type:	Homework assignment	**Due date:**	11/23/2019
Assignment topic:	Single linked list	**Assignment no.**	8a
Delivery:	WebCampus – cpp files and txt file		

Goal

Practice the use of linked lists

General remarks

- Keep all your testing code in submitted **`cpp`** files
- For all the problems, ensure/add the proper memory allocation/deallocation (all instructions about memory are not necessarily mentioned in the instruction).
- For all the problems, please use **`valgrind`** tool to confirm the proper memory management. Use the command:

```
valgrind --tool=memcheck --leak-check=yes --show-reachable=yes
--num-callers=20 --track-fds=yes ./01.o
```

where **`01.o`** is the name of tested binary file

Problem I. Linked Lists (20p)

Write a program managing linked lists. Use single-linked list, forward-created.
Each node describes a record info for a car.

Node:

```
int id
string make
int price
int year
Car *next   // link to the next element
```

In **`main()`** function, write a menu with the following options:

`1. add car` - add new node to the end of the list. Automatically assign new id.
`2. remove car` - remove node, prompt for id of the car to remove
`5. exit`

- Maintain a variable, where you store id numbers, so each newly added car will automatically receive new sequential id that was not assigned to any car before.
- Write the list of cars during each loop execution.
- Provide proper deletion of the memory (both when option 2 is used and when option 5 is used)

Sample output/operation

```
CAR MANAGEMENT
Car List:
----------
Options:
1. Add car
2. Remove car
5. Exit
Enter: 1
Enter make: Ford
Enter price: 5000
Enter year: 2011


CAR MANAGEMENT
Car List:
100    Ford         5000         2011
----------
Options:
1. Add car
2. Remove car
5. Exit
Enter: 1
Enter make: GMC
Enter price: 4500
Enter year: 2010
CAR MANAGEMENT
Car List:
100    Ford         5000         2011
101    GMC          4500         2010
----------
Options:
1. Add car
2. Remove car
5. Exit
Enter: 1
Enter make: Toyota
Enter price: 7000
Enter year: 2013


CAR MANAGEMENT
Car List:
100    Ford         5000         2011
101    GMC          4500         2010
102    Toyota       7000         2013
----------
Options:
1. Add car
2. Remove car
5. Exit
Enter: 2
Enter id of car to remove: 101
```

```
CAR MANAGEMENT
Car List:
100    Ford         5000         2011
102    Toyota       7000         2013
----------
Options:
1. Add car
2. Remove car
5. Exit
Enter: 5
```

Submission:

Include the following elements in your submission: (**rid** = your rebel id)

Problem	Element	File
Problem I	Code of your program (for problem 1)	rid_1.cpp file
	Summary of the submission	
	Summary: 1 cpp file, submit them to the WebCampus. Remember about proper names of the files!	