In the name of GOD

Principle Of Programming HW#5

Due date : Sunday, December 23rd, 23:55

1. Define a function that takes the head of a linked list as parameter and reverses the elements in place and returns the new head. (In place means that memory allocation is not allowed).

struct node {

int value;

node\* next;

};

prototype:

struct node \* reverse(node\* head); //returns head of the reversed list

Or

void reverse(node\*\* head);

\*recursive is bonus ;)

2. Write a program that manages student’s information including first and last name,

student number and some grades. The program can add

and delete student’s information by prompting the user for command. Commands

can have the following values:

· add: Gets student’s name, student number and some grades from user and

adds the student in the linked list if the student number is not a node.

· del: Gets student number from user and deletes that student from linked list.

· all: Shows all students’ names, numbers and grades average.

· save: change some info and Saves all changes .

(hint: you must use linked list.)

3. Implement malloc and free function using linked list. Your linked list should contain any meta data about the allocation (pointer itself, allocation size, etc).

Char memory[65536] ;

Prototype: void \*malloc(size\_t size);

Prototype: void free(void \*s);

· Bonus: defragment the memory (google is your friend ^\_^).

4. implement Scanf as it is.

Prototype: int scanf(const char \*format, ...);

for %d, %s, %c

· Compress your answers (your .c files) in a zip file named like StudentNO\_HW5.zip

o Eg : 9332222\_HW5.zip

· DO NOT WORRY ABOUT YOUR GRADES AND DO NOT COPY!

The thing we care most about is your hard work and progress. Just try your best and leave the rest to us. ^\_^

REGARDS