Lecture9 연습

#pragma warning (disable: 4996)

#include <stdio.h>

#include <stdlib.h>

#include <windows.h>

typedef struct node

{

int value;

node\* next;

}node;

void insertToList(int data, node\* list)

{

node\* curPos = list;

node\* newNode = (node\*)malloc(sizeof(node));

newNode->value = data;

newNode->next = NULL;

while (curPos->next != NULL)

curPos = curPos->next;

curPos->next = newNode;

}

void printList(node\* list)

{

int i = 0;

node\* curPos = list->next;

while (curPos != NULL)

{

printf("%d번째 수: %d\n", i+1, curPos->value);

curPos = curPos->next;

i++;

}

}

int main()

{

node\* myList = (node\*)malloc(sizeof(node));

myList->next = NULL;

int value;

int i;

for (i = 0; i < 10; i++)

{

printf("\n enter your number: ");

scanf("%d", &value);

insertToList(value, myList);

}

printList(myList);

system("pause");

}

Lecture10 실습

#define \_CRT\_SECURE\_NO\_WARNINGS

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

typedef struct book

{

char bookTitle[20];

char nameOfAuthor[20];

int volumes;

book\* next;

}book;

book\* library = NULL; //global variable

void addBook()

{

char bookName[20];

char author[20];

printf("Input Book title: ");

scanf("%s", bookName);

printf("Input Author: ");

scanf("%s", author);

if (library == NULL) //library에 book이 없는경우.

{

library = (book\*)malloc(sizeof(book));

book\* newBook = (book\*)malloc(sizeof(book));

strcpy(newBook->bookTitle, bookName);

strcpy(newBook->nameOfAuthor, author);

newBook->volumes = 1;

library->next = newBook;

}

else

{ //library에 1권이상 있는경우.

book\* curPos = library->next; //리스트 탐색할 변수

int check = 0;

while (curPos != NULL)

{

if (!strcmp(bookName, curPos->bookTitle)) //library에 책이 있는경우.

{

if (!strcmp(curPos->nameOfAuthor, author)) {

curPos->volumes += 1;

check = 1;

break;

}

}

curPos = curPos->next;

}

if (!check)

{

curPos = library;

book\* newBook = (book\*)malloc(sizeof(book));

strcpy(newBook->bookTitle, bookName);

strcpy(newBook->nameOfAuthor, author);

newBook->volumes = 1;

while (curPos->next != NULL)

curPos = curPos->next;

curPos->next = newBook;

}

}

printf("================================================\n");

printf("The book entitled %s is added to the library\n", bookName);

printf("================================================\n");

}

void bookbyAuthor()

{

book\* curPos =library;

char\* author =NULL;

printf("Input Author: ");

scanf("%s", author);

while (curPos !=NULL)

{

if (!strcmp(author, curPos->nameOfAuthor))

{

printf("================================================\n");

printf("Book title: %s\n", curPos->bookTitle);

printf("Author information: %s\n", curPos->nameOfAuthor);

printf("Number of books in the library: %d\n", curPos->volumes);

printf("================================================\n\n\n");

}

curPos = curPos->next;

}

}

void countBooks()

{

if (library == NULL) //library가 NULL이면 1권도 없는경우.

{

printf("================================================\n");

printf("total number of books in the library: 0\n");

printf("================================================\n");

return;

}

int sum = 0;

book\* curPos = library->next;

while (curPos != NULL)

{

sum += curPos->volumes;

curPos = curPos->next;

}

printf("================================================\n");

printf("total number of books in the library: %d\n", sum);

printf("================================================\n");

}

void borrowBook()

{

char\* bookName =NULL;

int check = 0; //책이 library에 있는지 확인하는 변수 없으면0, 있으면1

int numberOfBooks = 0; //책이 0권인지 그 이상인지 확인할 변수.

book\* curPos = library->next;

printf("Input Book title: ");

scanf("%s", bookName);

while (curPos !=NULL)

{

if (!strcmp(bookName, curPos->bookTitle)) //책이 library에 등록되어 있는경우

{

if (curPos->volumes) //책이 1권이상 있는경우

{

curPos->volumes -= 1;

check = 1;

numberOfBooks = 1;

break;

}

}

curPos = curPos->next;

}

if (check) //check !=0

{

if (!numberOfBooks) //책이 1권이상 있었을 경우.

{

printf("================================================\n");

printf("You should return the book within next 30 days. Here is is.\n");

printf("================================================\n");

}

else

{ //0권이었을 경우.

printf("================================================\n");

printf("Oops! Sorry. All books in the library are currently on loan.\n");

printf("================================================\n");

}

}

else

{

printf("================================================\n");

printf("The book that you have requested is not currently available\n");

printf("================================================\n");

}

}

int main()

{

int menu;

while (1)

{

printf("1. Add a new Book\n");

printf("2. Display all the books in the library of a particular author\n");

printf("3. Display the total number of books in the library\n");

printf("4. Borrow a book\n");

printf("0. Quit program\n\n");

printf("--> Choose a menu in the list:");

scanf("%d", &menu);

switch (menu)

{

case 0:

return 0;

case 1:

addBook();

break;

case 2:

bookbyAuthor();

break;

case 3:

countBooks();

break;

case 4:

borrowBook();

break;

default:

printf("You have input a wrong number\n");

continue;

}

}

}

Lecture11 실습

#pragma warning (disable : 4996)

#include <stdio.h>

#include <Windows.h>

void ex1()

{

int num = 10;

printf("%d\n", num);

printf("%p\n", &num);

// printf("%d\n", &num);

}

void min\_max1(int number[], int size, int\* minValue, int\* maxValue)

{

int i;

\*minValue = number[0];

\*maxValue = number[0];

for (i = 1; i < size; i++)

{

if (number[i] > \*maxValue)

\*maxValue = number[i];

if (number[i] < \*minValue)

\*minValue = number[i];

}

}

void min\_max2(int number[], int size, int\* minValue, int\* maxValue)

{

int \*p;

\*minValue = number[0];

\*maxValue = number[0];

for (p = &number[0]; p < &number[size - 1]; p++)

{

if (\*p > \*maxValue)

\*maxValue = \*p;

if (\*p < \*minValue)

\*minValue = \*p;

}

}

void main()

{

/\*

printf("----ex1----\n");

ex1();

printf("\n");

\*/

/\*

printf("----min\_max1----\n");

int minValue1 = 0;

int maxValue1 = 0;

int arr1[] = {3, 4, 5, 9, 8, 7, 1, 2, 3};

int length1 = sizeof(arr1) / sizeof(int);

min\_max1(arr1, length1, &minValue1, &maxValue1);

printf("minValue1: %d\nmaxValue1: %d\n", minValue1, maxValue1);

printf("\n");

\*/

/\*

printf("max\_max2\n");

int minValue2 = 0;

int maxValue2 = 0;

int arr2[] = { 30, 40, 50, 90, 80, 70, 10, 20, 30 };

int length2 = sizeof(arr2) / sizeof(int);

min\_max2(arr2, length2, &minValue2, &maxValue2);

printf("minValue2: %d\nmaxValue2: %d\n", minValue2, maxValue2);

printf("\n");

\*/

system("pause");

}

Lecture12 실습

1번

#define \_CRT\_SECURE\_NO\_WARNINGS

#include <stdio.h>

#include <stdlib.h>

#include <Windows.h>

void getMaxMin(float\* list, int N, float\* max, float\* min)

{

int i;

\*max = \*list;

\*min = \*list;

for (i = 1; i < N; i++)

{

if(\*max < \*(list + i))

\*max = \*(list + i);

if (\*min > \*(list + i))

\*min = \*(list + i);

}

}

void main()

{

int i, N;

float \*a, max, min;

printf("how many elements will you input? ");

scanf("%d", &N);

a = (float\*)malloc(sizeof(float)\*N); //바뀐부분 =>(float\*) 형변환

for (i = 0; i < N; i++)

{

printf("Input [%d] th float value:", i + 1);

scanf("%f", &a[i]);

}

getMaxMin(a, N, &max, &min);

printf("Max : %f, Min : %f\n", max, min);

free(a);

system("pause");

return;

}

2번

#define \_CRT\_SECURE\_NO\_WARNINGS

#include <stdio.h>

#include <string.h>

#include <Windows.h>

#define MAX\_LENGTH 100

void getLCP(char\* x, char\* y, char\* res)

{

int i =0;

int len = 0;

if (strlen(x) < strlen(y))

len = strlen(x);

else

len = strlen(y);

for (i = 0; i < len; i++)

{

if (\*(x + i) == \*(y + i))

\*(res + i) = \*(x + i);

else

\*(res + i) = '\0';

}

}

void main()

{

char X[MAX\_LENGTH];

char Y[MAX\_LENGTH];

char LCP[MAX\_LENGTH];

printf("Input two strings: ");

scanf("%s %s", X, Y);

getLCP(X, Y, LCP);

printf("The longest common prefix is %s\n", LCP);

system("pause");

return;

}

3번

#define \_CRT\_SECURE\_NO\_WARNINGS

#include <stdio.h>

#include <stdlib.h>

#include <Windows.h>

int\* addMatrix(int\* a, int\* b, int N)

{

int i;

int \*result = (int\*)malloc(sizeof(int)\*N);

for (i = 0; i < N; i++)

\*(result + i) = \*(a + i) + \*(b + i);

return result;

}

void main()

{

int \*matA, \*matB, \*matC, n;

int i, j;

j = 0;

printf("What is the demension of input matrices : ");

scanf("%d", &n);

matA = (int\*)malloc(sizeof(int)\*n\*n); //바뀐부분 =>(int\*) 형변환

matB = (int\*)malloc(sizeof(int)\*n\*n);

printf("Input the matrix A.\n");

//complete the code

//ver1

/\*

for (i = 0; i < n \* n; i++)

{

printf("A[%d][%d]: ", i+1, j+1);

scanf("%d", (matA + i));

}

\*/

//ver2

for (i = 0; i < n; i++)

{

for (j = 0; j < n; j++)

{

printf("A[%d][%d]: ", i + 1, j + 1);

scanf("%d", (matA + n \* i + j));

}

}

printf("Input the matrix B.\n");

//complete the code

//ver1

/\*

for (i = 0; i < n \* n; i++)

{

printf("B[%d][%d]: ", i + 1, j + 1);

scanf("%d", (matB + i));

}

\*/

//ver2

for (i = 0; i < n; i++)

{

for (j = 0; j < n; j++)

{

printf("B[%d][%d]: ", i + 1, j + 1);

scanf("%d", (matB + n \* i + j));

}

}

matC = addMatrix(matA, matB, n\*n);

printf("The result matrix is: \n");

//complete the code

for (i = 0; i < n; i++)

{

for (j = 0; j < n; j++)

{

printf("%d ", \*(matC + n\*i +j));

}

printf("\n");

}

printf("\n");

system("pause");

return;

}

4번

#define \_CRT\_SECURE\_NO\_WARNINGS

#include <stdio.h>

#include <windows.h>

int myStrCmp(char \*x, char \*y)

{

int i = 0;

while (\*(x + i) != '\0' && \*(y + i) != '\0')

{

printf("x+i: %c\n", \*(x + i));

printf("y+i: %c\n", \*(y + i));

if (\*(x + i) - \*(y + i) != 0)

break;

i++;

}

return \*(x + i) - \*(y + i);

}

int main()

{

char X[100];

char Y[100];

printf("Input the first string: ");

gets\_s(X);

printf("Input the second string: ");

gets\_s(Y);

int ret = myStrCmp(X, Y);

if (ret < 0)

printf("%s appears before %s", X, Y);

else if (ret > 0)

printf("%s appears after %s", X, Y);

else

printf("%s,", "X is equal to Y");

printf("\n");

system("pause");

return 0;

}