Object-Oriented Programming

ASSIGNMENT 1

박태성/2015722031/2019 년 4 월 5 일

PROBLEMS AND EXPLANATIONS

- 1.

Draw a shape of asterisk and diamond by using a character '$'. The size of the shape (N) is and odd number ranging from 5-29. The program takes the size of shape(N) as an input.

- 2.

Write a program that outputs the final balance of a transportation card by entering each travel distance. Initial balance of the card is 20000 won. The basic fare is 720 won for 40km and additional fare is 80 won for every 8km from 41km. Minimum travel distance is 4km and maximum travel distance is 178km. Either input is out of the ranges or it cannot be deducted anymore, exit the program.

- 3.

Write a program with four functions in two-dimensional array of size 2*6. Four functions are appending, deleting, searching and sorting. The first row contains student ID, and the second row contains corresponding math score. Sort the array in ascending order by student ID or score.

- 4.

Write a program that calculates the maximum and minimum values of a quadratic function in a given range. The program takes the coefficients a, b, and c as an input. A range of x is -30 to less than 30.

- 5.

Write a program that reads a string and calculates the frequency of characters. Input string is case-insensitive. The program outputs number of each character divided by total number of characters.

- 6.

Write a program that calculates the number of coordinates at which point C can be located. Point C is random point between point A and B.

- 7.

Write a program that prints the time in words. Input is given in numbers. Output format is distinguished by the input. At minutes =0, print o' clock. For 1<=minutes<=30, use past, and for 30 <minutes<=59 use to.

- 8.

Write a program that finds the password rules that user didn't keep. Compare the string user typed with six criteria and output the unsatisfied criteria. If password satisfies all criteria, print "Thank you for signing up!".

- 9.

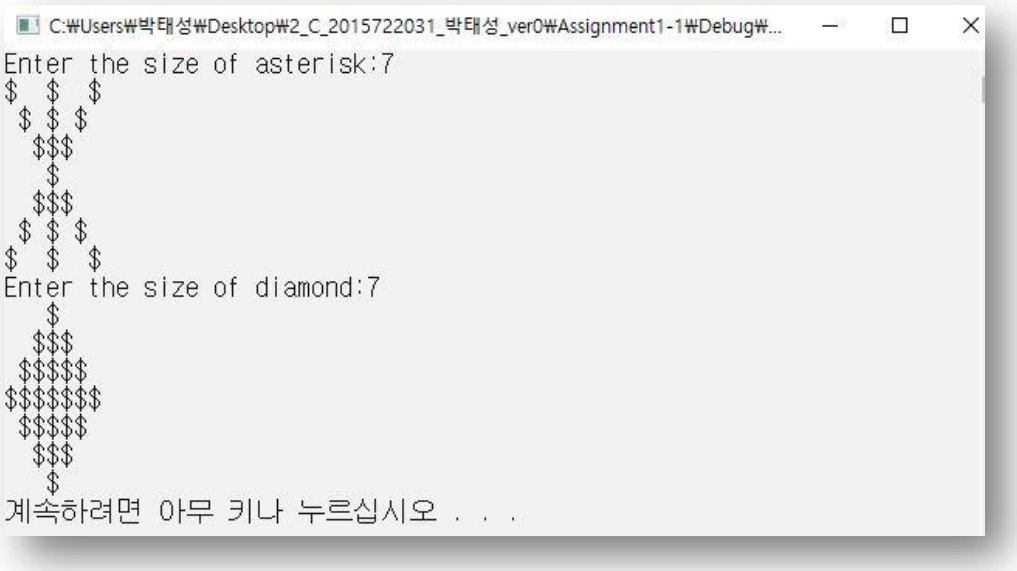
Write a program that makes a 9*3 matrix and transposes this matrix. Elements of the matrix is generated randomly by the program. A range of elements is 0 to less than 64.

- 10.

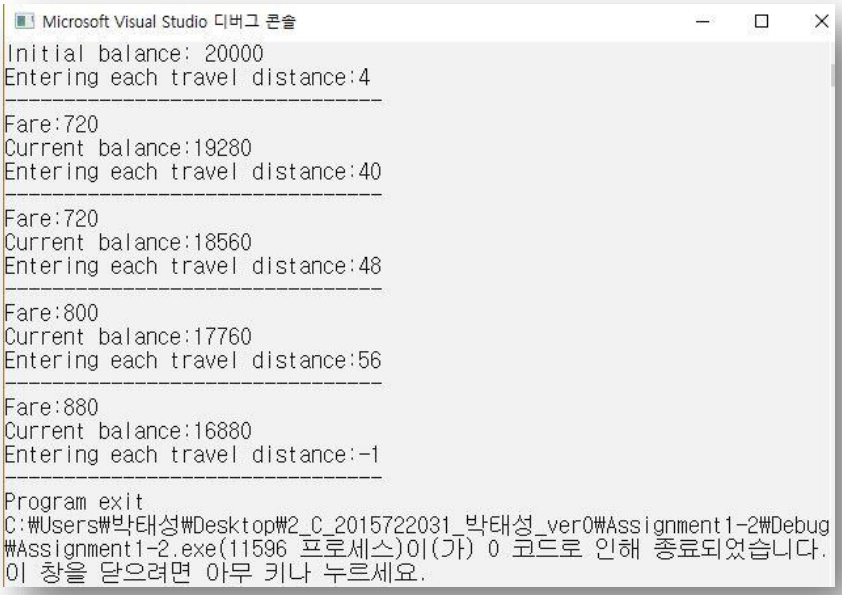
Generate a Magic Square. A square is called a Magic Square if the sum of the entries on the row, the column and the diagonal is same. A program takes the size of the square as an input. The input must be an odd number between 3 and 15.

RESULT

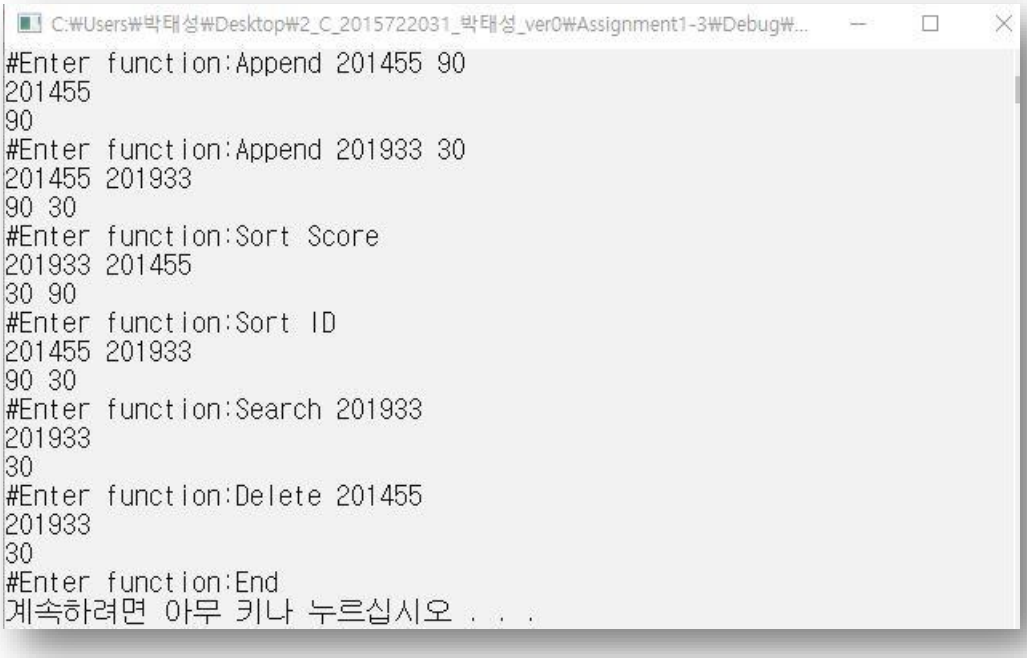
- 1.



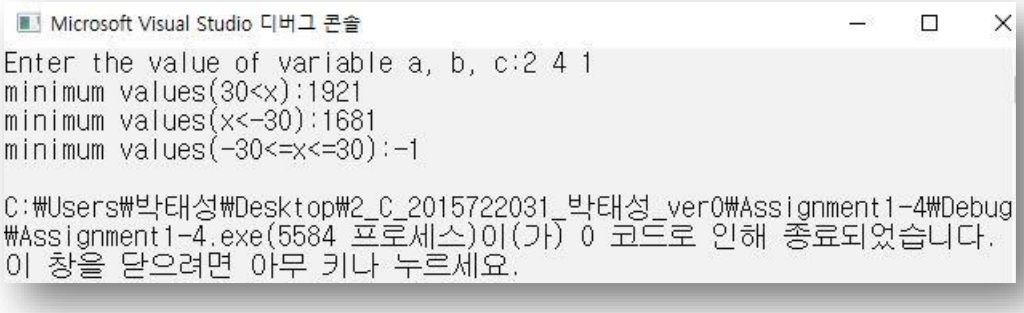
- 2.

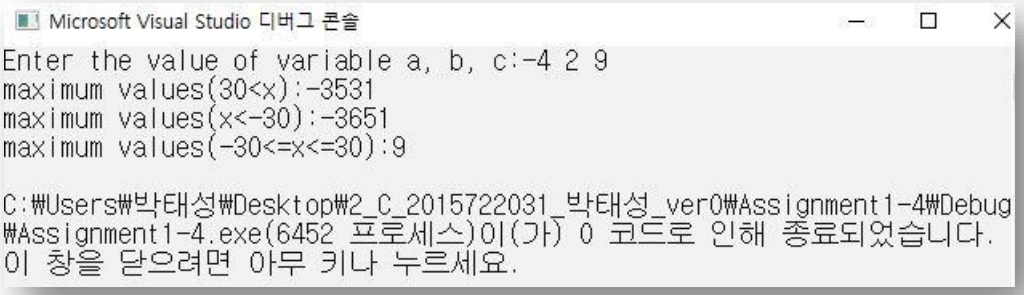

Microsoft Visual Studio 디버그 콘솔
Initial balance: 20000
Entering each travel distance:4
Fare:720
Current balance:19280
Entering each travel distance:40
Fare:720
Current balance:18560
Entering each travel distance:48
Fare:800
Current balance:17760
Entering each travel distance:56
Fare:880
Current balance:16880
Entering each travel distance:-1
Program exit
C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-2₩Debug
₩Assignment1-2.exe(11596 프로세스)이(가) 0 코드로 인해 종료되었습니다.
이 창을 닫으려면 아무 키나 누르세요.

- 3.

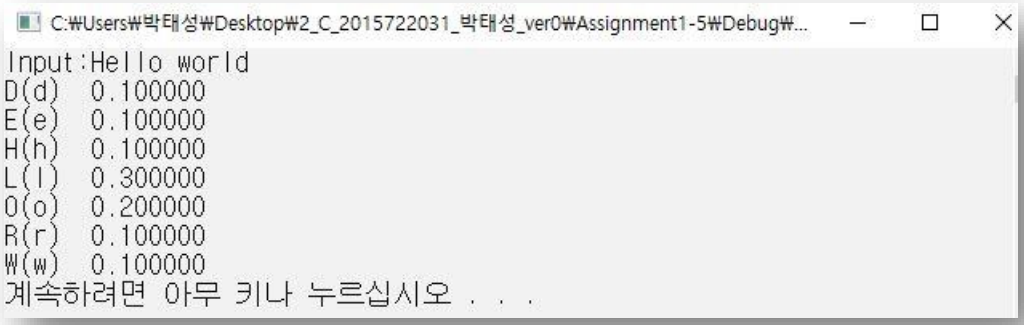

C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-3₩Debug₩...
#Enter function:Append 201455 90
201455
90
#Enter function:Append 201933 30
201455 201933
90 30
#Enter function:Sort Score
201933 201455
30 90
#Enter function:Sort ID
201455 201933
90 30
#Enter function:Search 201933
201933
30
#Enter function:Delete 201455
201933
30
#Enter function:End
계속하려면 아무 키나 누르십시오 . . .

- 4.

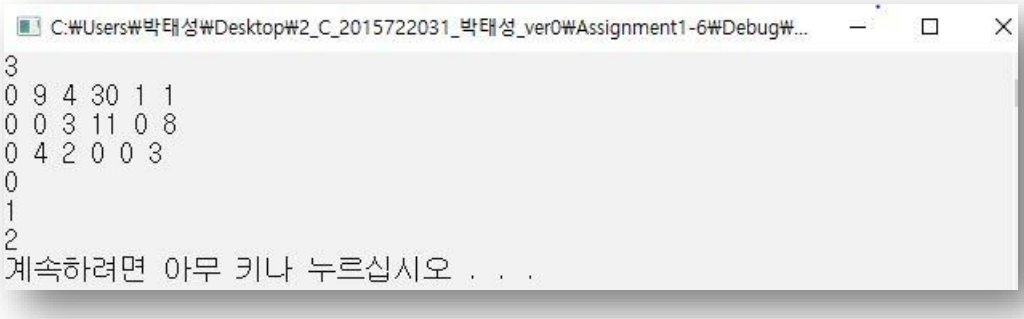

Microsoft Visual Studio 디버그 콘솔
Enter the value of variable a, b, c:2 4 1
minimum values(30<x):1921
minimum values(x<-30):1681
minimum values(-30<=x<=30):-1
C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-4₩Debug
₩Assignment1-4.exe(5584 프로세스)이(가) 0 코드로 인해 종료되었습니다.
이 창을 닫으려면 아무 키나 누르세요.


Microsoft Visual Studio 디버그 콘솔
Enter the value of variable a, b, c:-4 2 9
maximum values(30<x):-3531
maximum values(x<-30):-3651
maximum values(-30<=x<=30):9
C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-4₩Debug
₩Assignment1-4.exe(6452 프로세스)이(가) 0 코드로 인해 종료되었습니다.
이 창을 닫으려면 아무 키나 누르세요.

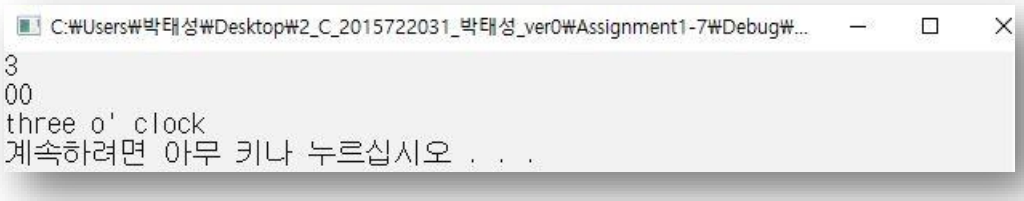
- 5.

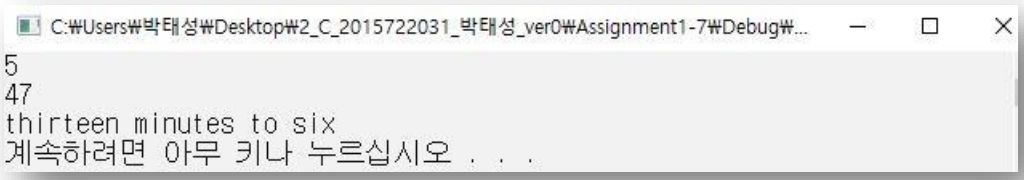

C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-5₩Debug₩...
Input:Hello world
D(d) 0.100000
E(e) 0.100000
H(h) 0.100000
L(l) 0.300000
O(o) 0.200000
R(r) 0.100000
W(w) 0.100000
계속하려면 아무 키나 누르십시오 . . .

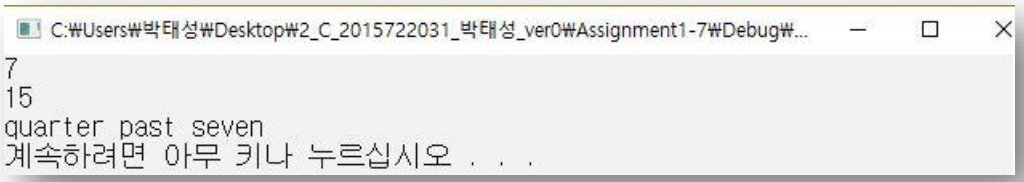
- 6.


C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-6₩Debug₩...
3
0 9 4 30 1 1
0 0 3 11 0 8
0 4 2 0 0 3
0
1
2
계속하려면 아무 키나 누르십시오 . . .

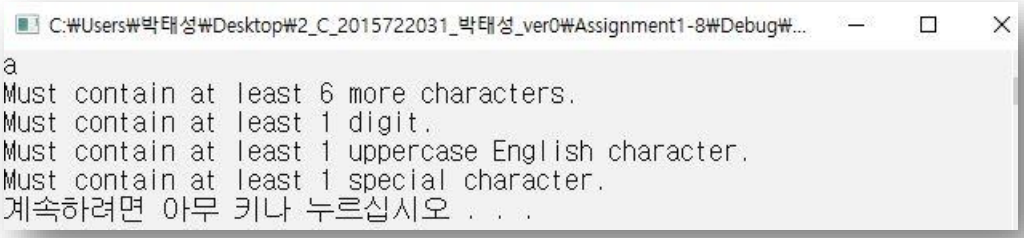
- 7.

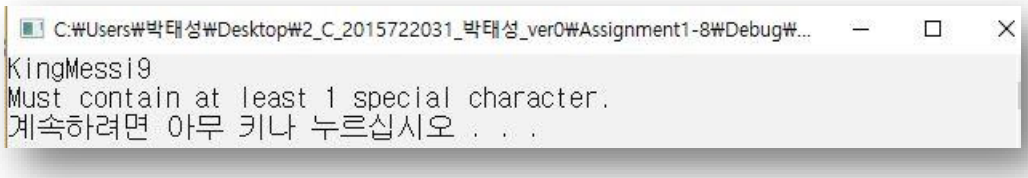

C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-7₩Debug₩...
3
00
three o' clock
계속하려면 아무 키나 누르십시오 . . .

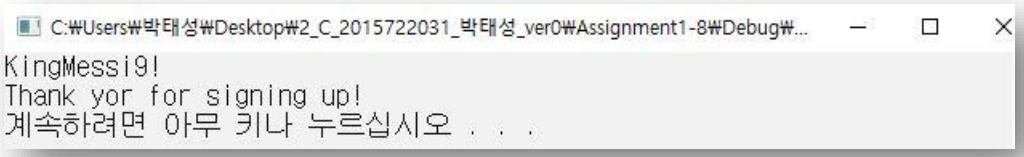

C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-7₩Debug₩...
5
47
thirteen minutes to six
계속하려면 아무 키나 누르십시오 . . .

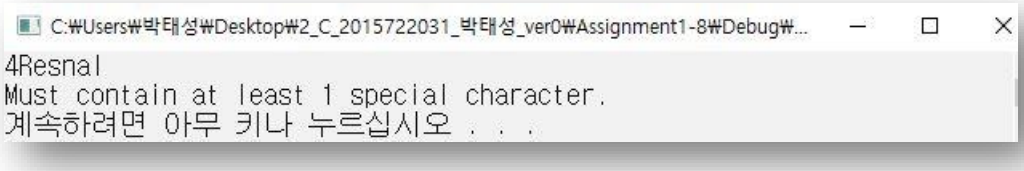

C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-7₩Debug₩...
7
15
quarter past seven
계속하려면 아무 키나 누르십시오 . . .

- 8.

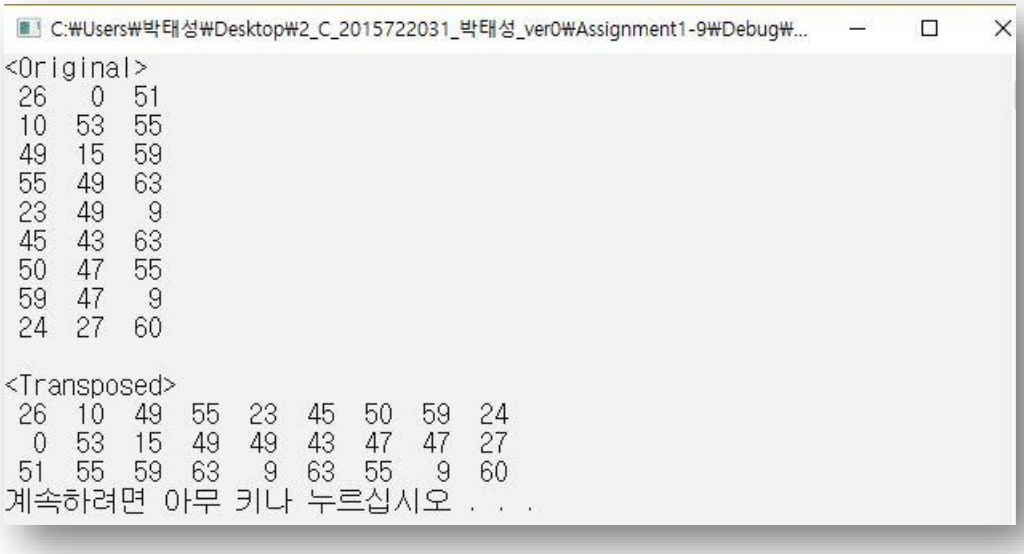

C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-8₩Debug₩...
a
Must contain at least 6 more characters.
Must contain at least 1 digit.
Must contain at least 1 uppercase English character.
Must contain at least 1 special character.
계속하려면 아무 키나 누르십시오 . . .


C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-8₩Debug₩...
KingMessi9
Must contain at least 1 special character.
계속하려면 아무 키나 누르십시오 . . .

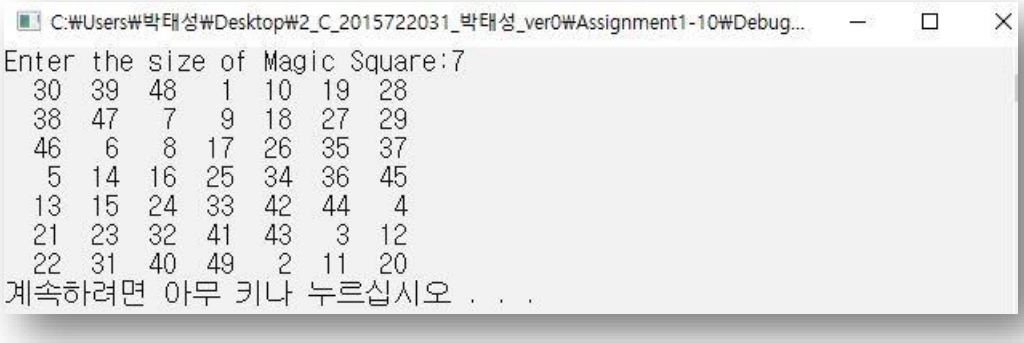

C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-8₩Debug₩...
KingMessi9!
Thank yor for signing up!
계속하려면 아무 키나 누르십시오 . . .


C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-8₩Debug₩...
4Resnal
Must contain at least 1 special character.
계속하려면 아무 키나 누르십시오 . . .

- 9.


C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-9₩Debug₩...
<Original>
26 0 51
10 53 55
49 15 59
55 49 63
23 49 9
45 43 63
50 47 55
59 47 9
24 27 60
<Transposed>
26 10 49 55 23 45 50 59 24
0 53 15 49 49 43 47 47 27
51 55 59 63 9 63 55 9 60
계속하려면 아무 키나 누르십시오 . . .

- 10.


C:₩Users₩박태성₩Desktop₩2_C_2015722031_박태성_ver0₩Assignment1-10₩Debug...
Enter the size of Magic Square:7
30 39 48 1 10 19 28
38 47 7 9 18 27 29
46 6 8 17 26 35 37
5 14 16 25 34 36 45
13 15 24 33 42 44 4
21 23 32 41 43 3 12
22 31 40 49 2 11 20
계속하려면 아무 키나 누르십시오 . . .

CONCLUSION AND DISCUSSION

The results were different when I used sing insertion and extraction operator compared to multiple uses of the insertion and extraction operator. Thus, I had to use the right method to solve the problem.

Compared to the C language, there were several standard library functions that help make code easier to see, simpler, and shorter.

The naming of identifiers was not as easy as I had expected. The identifier I named is short but not satisfactory because it is not descriptive.

At first, I wrote all the code in the main function. However, it was difficult to modify, and I was also difficult to read. So, I have defined the repeated code that has important functions. As a result, my code is easier to manage and edit than before.