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Structure & Design Programming Language (CSC 710)

(Assignment 1)

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Submitted to:

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Question 1:

Task: We need to define two array of size 30 and give the input by user. After array gets data, one array is to be sorted using Bubble sort and other is to be sorted using insertion sort. Additionally, those sorted data are to be merged using merge sort without any duplicate values. And finally, binary search operation is applied to search for the targeted element in sorted array of merged sort.

1 (a) - Implementation using Java Programming Language

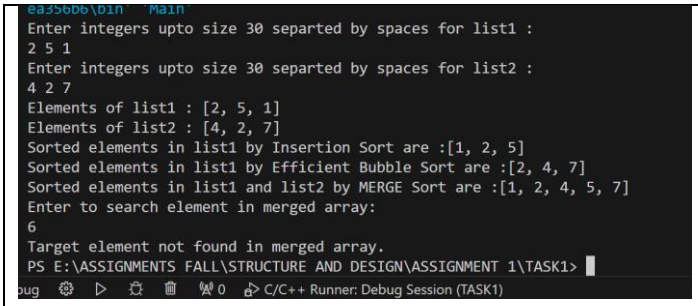

Fig 1.1

Here , target element 6 is not found in array.

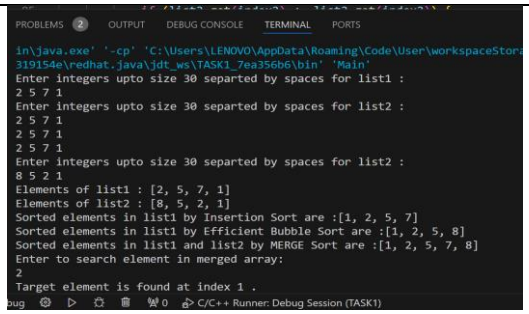

Fig 1.2

Here , target element 6 is found in array.

Explanation:

Here two arrays of list are given data by user.
List 1 is sorted using Insertion sort and List 2 is sorted using bubble sort. And list 1 and list 2 are again merged without any duplicate values. Finally binary search operation is performed to search the target element as shown in figure.

How to open file [Main.java] :

Ways to open/run file

In Terminal : Type "javac Main.java" Type "java Main"	VS Code : Open file in Vs code. Run java file directly (F5)	Online compiler : Copy code and run on Online Java Compiler - Programiz

1 (b) - Implementation using C++ Programming Language

Explanation:

Here two arrays of list are given data by user.
List 1 is sorted using Insertion sort and List 2 is sorted using bubble sort. And list 1 and list 2 are again merged without any duplicate values. Finally binary search operation is performed to search the target element as shown in figure.

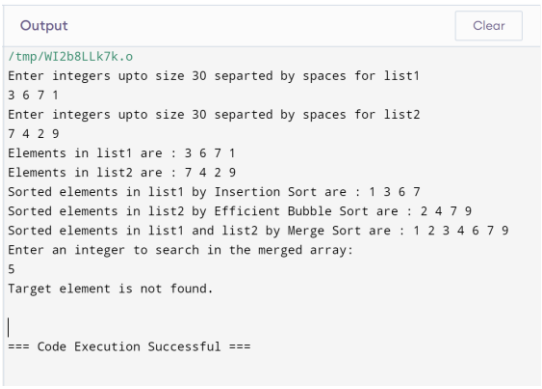

Fig 2.1
Here target element is not found.

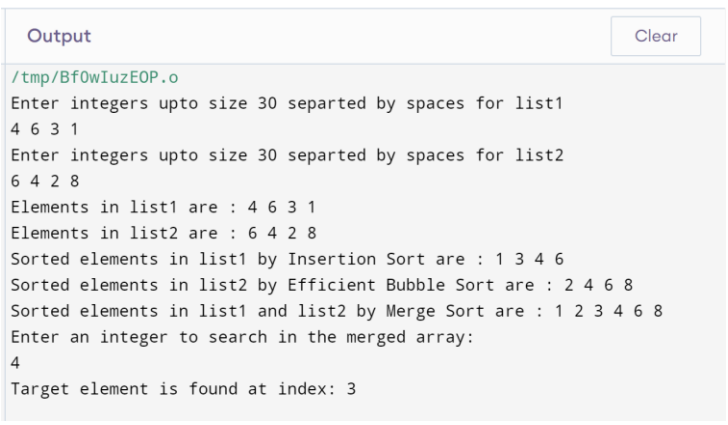

Fig 2.2
Here, target element is found.

How to open file [Main.cpp]:

Ways to open/run file

To run on command line	To run on code blocks:	Run on Online platform :
1. Install g++ compiler 2. g++ -o Main Main.cpp 3. ./ Main.cpp	Copy the code to editor Compile and run (F9)	Copy code to this editor and run. https://www.programiz.com/cpp-programming/online-compiler/

1 (c) - Implementation using Python Programming Language :

Explanation:

Here two arrays of list are given data by user.
List 1 is sorted using Insertion sort and List 2 is sorted using bubble sort. And list 1 and list 2 are again merged without any duplicate values. Finally binary search operation is performed to search the target element as shown in figure.
User input/output

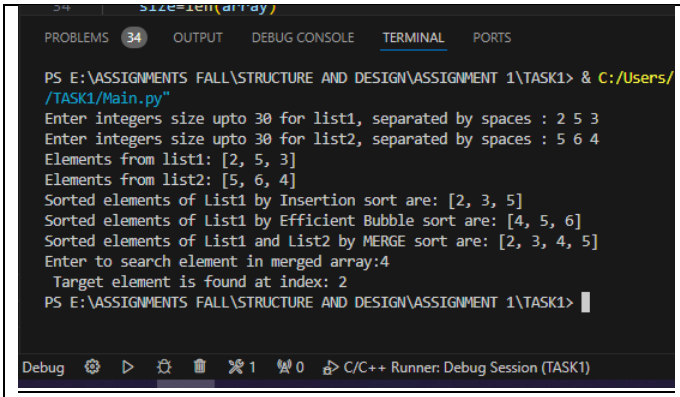

Fig 3.1
Here, target element 4 is not found in array.

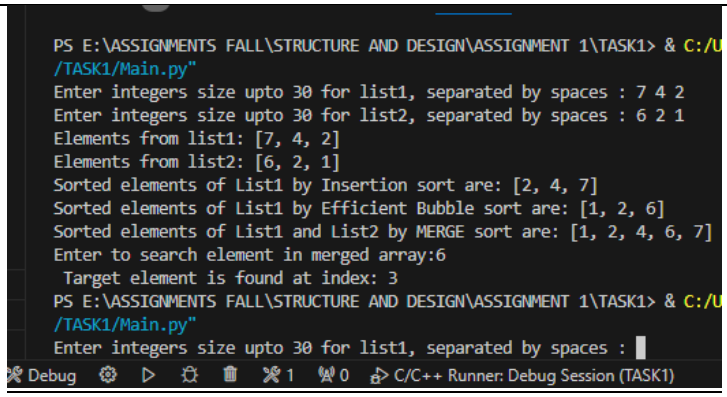

Fig 3.2
Here, target element 6 is found in array.

How to open file [main.py]

In Terminal : cd /path/to/your/file Type “python main.py “ Or if you have python3: “Python3 main.py”	VS Code : Open file in Vs code. Run python file directly (F5)	Online compiler : Copy code and run on https://www.programiz.com/python-programming/online-compiler/

Question 2:

Task : here we are required to balance the symbol of opening and corresponding closing braces using stack or LinkedList. If the braces of opening and closing matched it should return “balanced” otherwise “unbalanced”.

2(a) - Implementation using linked list using stack in C++

Explanation

This program is written using pascal language. I have written this code using code Blocks using C++. Here we are checking if all the opening braces matches the corresponding closing braces or not. For eg. if user input is ( ) => balance input so it , balanced(output). Similarly, if the user input is {] => unbalance input so it is , unbalanced.

User input/output

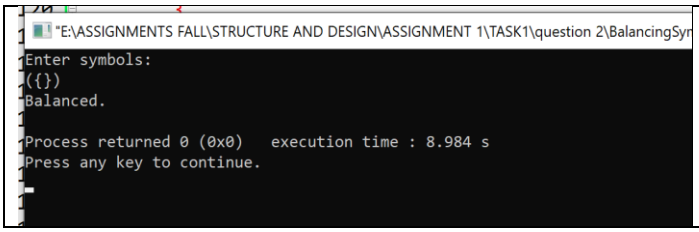

Fig 2.1 : Balanced Symbol

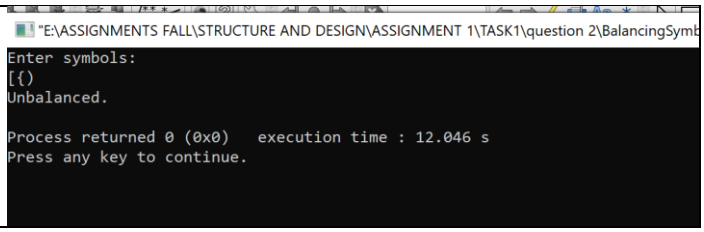

Fig 2.2 : Unbalanced Symbol

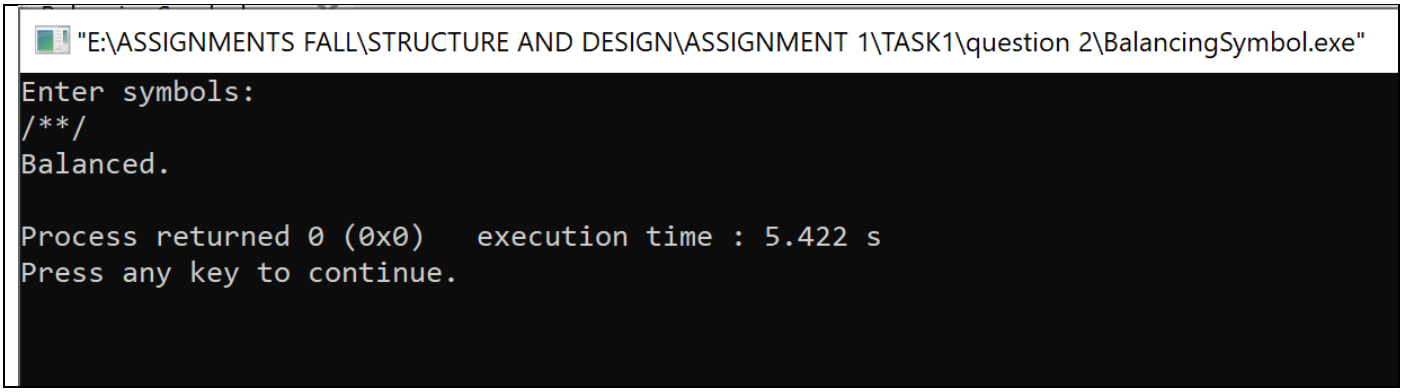

Fig 2.3 Balanced Symbol

How to open file [BalancingSymbol.cpp]

To run on command line 4. Install g++ compiler 5. g++ -o BalancingSymbol BalancingSymbol.cpp 6. ./ BalancingSymbol	To run on code blocks: Copy the code to editor Compile and run (F9)	Run on Online platform : Copy code to this editor and run. https://www.programiz.com/cpp-programming/online-compiler/

2(b) - Implementing with Pascal using Stack

Explanation

This program is written using pascal language. Here we are checking if all the opening braces matches the corresponding closing braces or not. For eg. if user input is ( ) => balance input so it , balanced(outpu). Similary, if the user input is {] => unbalance input so it is, unbalanced.

User Input/output:

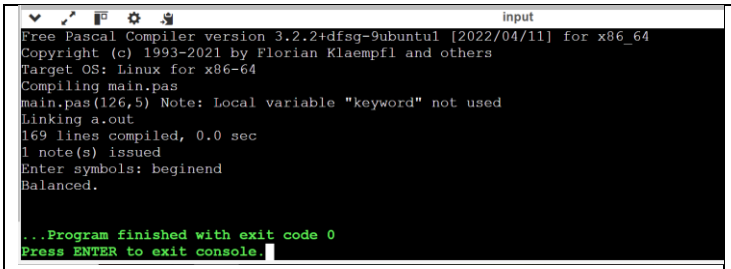

Fig 3.1 - input (beginend) = balanced.

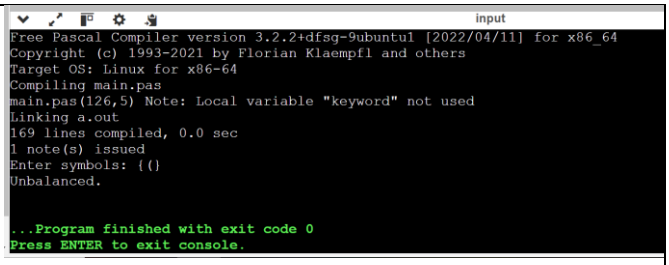

Fig 3.2 – input {(} = output (unbalanced)

How to open file [program.pas]

To run, open online compiler : Copy and paste code and run https://www.onlinegdb.com/online_pascal_compiler

References :

Github : Assignment has been uploaded to github account as well. To view click below:

https://github.com/praleshraya/FA24ASSIGNMENT

THANK YOU ! ! !