

Task1 [50 points]:

Convert functions in “merge.h” to template based functions. Currently all three of them are defined for int only. It should every data type with an operated< defined for it.

```
void merge(int arr[], int l, int m, int r)
void mergeSort(int arr[], int l, int r)
void printArray(int A[], int size)
```

Use your modified “merge.h” to sort double, char, and string arrays in “main.cpp”. You have to change a little to determine correct size of the array. Currently it is only calculating size of an integer array.

TASK-2 (50 points)

Write a function “2StackSort”. This function will take an unordered stack and return an ordered stack. But I can only use one more stack and one temporary variable and some counter variables.

```
std::stack<T> 2StackSort (std::stack<T> st)
```

Read “Cpp_STL_ReferenceManual.pdf” there is a STL class Stack in C++. Use it to create Stacks for your function. This student objects for each line in the data file and insert it into a vector.

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Format of name in Lab submissions

<Student-ID>-Lab<#>-<TA-ID>.zip

For example 18100075-Lab4-Ali.zip means this is the lab submission of 18100075 for Lab4 checked byAli. This way it will be easier for students and TAs to figure out the TA in case of any problems.