National University
Of Computer and Emerging Sciences

Assignment # 01

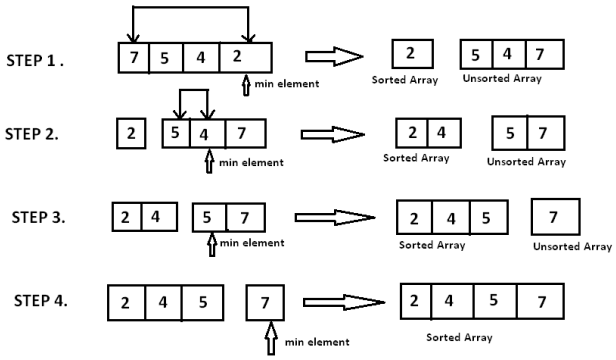
Course: EE2003-COAL
Instructor: Safia Fatima
Due Date: See Slate

Task 1:
Given an integer, your task is to reverse it's bit pattern and store the updated integer in a register. For example, you have an integer $(53)_{10} = (00110101)_{2,}$ the updated number should be $(172)_{10} = (10101100)_{2.}$

Input: 53
Output: 172

Task 2:
Selection sort is a simple sorting algorithm that finds the minimum number in an array and swaps it with the leftmost element. This swapped element becomes part of the sorted array and for the next iteration it repeats the same process i.e: finds minimum element and swaps it with the leftmost element of unsorted array. These steps are repeated until all elements of array are traversed.

For example:



Given an array of 'n' elements where **n>=4**, your task is to sort it using selection sort.

Note:
An array having less than 4 elements will not be marked. You can only use selection sort. No other sorting algorithm will be accepted.

Task 3:
You are given two arrays.

Array-1:
Array-1 consist of ‘n’ elements where **n>=8**. Your task is to find the sum of elements for each half of the array.
For example:
1-3-9-2-4-8-7-1-6-5
Sum of first half: 1+3+9+2+4 = 19
Sum of second half: 8+7+1+6+5 = 27

Array-2:
Array-2 consist of ‘n’ elements where **n>=4.** Your task is to find the **minimum** element in the array.
For example:
11-8-4-9-3-5-8
Min = 3

Finally, your task is to use the **greater_half** of **Array-1** and divide it by **minimum** element of **Array-2**.
To find greater_half, compare first half and second half.
For example in the above case:
19<27
Hence, greater_half is **27**.

Final output:
greater_half of Array-1 ÷ min of Array-2 = 27÷3 = 9

Note:

- All these tasks must be done using 16-bit assembly programming concepts taught to you in the class.
- Write a generalized code for all questions because I will be checking the output for different set of inputs.
- Read the tasks carefully. They might seem complicated at first read, but a thorough reading can make them simple and easy.
- Start working on them as soon as possible because you won’t be able to complete them at end time.
- **Any plagiarized work will be marked straight 0.**
- Good Luck :)