**LAB 9: SORTING**

1. Write a program that sorts 5 student records. Each student record consists of a student id, student name, as well as grade of subject (A, B, C, D, F). The program must prompt the user to input each student record details and display the student records again in the order of grade of subject from A - F. Use the insertion sort algorithm.

**Sample output:**

|  |
| --- |
| Student #1  --------------  ID: 1133  Name: Jane  grade (A, B, C, D or F): B  Student #2  --------------  ID: 1224  Name: Ong  grade (A, B, C, D or F): A  Student #3  --------------  ID: 1886  Name: Jane  grade (A, B, C, D or F): D  Student #4  --------------  ID: 1547  Name: Kelvin  grade (A, B, C, D or F): C  Student #5  --------------  ID: 1554  Name: Husni  grade (A, B, C, D or F): B  Ranking of Student  -------------------  Rank ID Name Grade  1 1224 Ong A  2 1133 Jane B  3 1554 Husni B  4 1547 Kelvin C  5 1886 Jane D |

1. Modify the program above using selection sort.

**Submission Question**

Given is an array containing the elements as shown in the diagram below, sort the sequence of numbers in **ascending order** by using **Merge Sort**.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 23 | 14 | 56 | 45 | 35 | 98 | 75 | 66 | 4 |

Size = 9, 9/2 = 5,4

9

|  |  |  |  |
| --- | --- | --- | --- |
| 23 | 14 | 56 | 45 |

|  |  |
| --- | --- |
| 23 | 14 |

[23][14] = [14][23]

|  |  |
| --- | --- |
| 56 | 45 |

[56][45] = [45][56]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 35 | 98 | 75 | 66 | 4 |

|  |  |
| --- | --- |
| 35 | 98 |

[35][98] = [35][98]

|  |  |  |
| --- | --- | --- |
| 75 | 66 | 4 |

|  |  |
| --- | --- |
| 75 | 66 |

|  |
| --- |
| 4 |

[75] [66] = [66][75]

[4] = [4]

[4][66][75]

COMBINE [4][66][75][98][35]

[4][35][66][75][98]

COMBINE [14][23] [45][56] WITH [4][35][66][75][98]

**[4,14,23,35,45,56,66,75,98]**