1. Construct a GUI as shown in figure 1 using Java.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | READ DATA |  |  |  |  | | --- | --- | --- | | QUCIK SORT |  | PIVOT SELECT |  |  |  |  | | --- | --- | --- | | RADIX SORT |  | BASE |  |  | | --- | | HEAPSORT | | VIEW GRAPH | |

Fig :1

1. Create a database table preferably using the MySQL . The table should be created with at least two attributes like, S. No, Temperature\_Reading. The data in the table should be created using the window shown in Figure 2. For example, in Figure 2.,user can type the temperature value and click on the “Add” Button. Then a new tuple with that value should be created in the table. Have at least a minimum of 1000 entries in the table.

Since adding 1000 entries using the window in Figure 2 is time consuming. Try to automate the data entry process in to the table using “automate” button in Figure 2. When user clicks on the “automate” button, a new window should appear asking the “How many tuples you want to generate automatically”. If we enter 1000 then in the table, 1000 tuples should be created with random temperature values.

1. The GUI shown in figure1 should have the following specifications.
2. On clicking the button that has READ DATA, it should pop a window as shown in figure 2.

|  |
| --- |
| Enter Temperature:  Automate  ADD  FINISH |

Fig 2

1. On clicking FINISH button the above window (Figure 2) should close.
2. Retrieve all the numbers in the temperature attribute of the table and then give them as input to the sorting algorithm.
3. Sorting algorithms QUICK SORT, RADIX SORT and HEAP SORT are performed by clicking on the respective buttons of Figure 1. PIVOT SELECT (text box) and BASE (text box) in Figure 1 should be activated only after selecting QUICK SORT, andRADIX SORT respectively.
4. PIVIOT SELECT should allow choosing n/2, n/4 or n/6 as pivot position.
5. BASE allows to select 2, 10 or 16 as the base
6. On clicking the button VIEW GRAPH, a bar chart has to be generated that compares the time complexities of above 3 sorting algorithms namely quick sort, radix sort and heap sort respectively. VIEW GRAPH should work only when all the three sorting algorithms are performed.X-axis: number of temperature readings Y-Axis: Time

Note: “n” is the number of values given as input to sorting algorithm.