Comments in RED, input in BLUE, output in BLACK.

I did decide to include the delete and update methods. I did add a boolean but I did it by making a container class for the Student node. I did not make any changes to the Student class. The getKey method returns the name. I have included menu access to both the showAll method which outputs the sorted array and printArray which outputs the array in index order (ignoring nulls). This last allows for tracking of deleted nodes. I run the update method twice, once with the same name and once with a different name. The point is that insert will replace a deleted node that has the same name. Many updates will likely have the same key value so it makes sense to do it this way.

Please enter the maximum number of nodes.

20

How many random entries to start?

10

Brenda s55440482 3.52 // This list is in the order they were added to tree.

Brandon s94309699 2.98

Braedon s59285465 2.16

Jazmin s72207014 3.95

Simon s59093432 2.55

Khalil s32135727 3.56

Mckayla s83290265 3.03

Clarence s95460736 2.26

Konnor s95863124 3.97

Mikaela s04249720 2.16

Brenda s55440482 3.52 // This list is in the order they appear in the main array.

Brandon s94309699 2.98

Jazmin s72207014 3.95

Braedon s59285465 2.16

Clarence s95460736 2.26

Simon s59093432 2.55

Khalil s32135727 3.56

Mckayla s83290265 3.03

Konnor s95863124 3.97

Mikaela s04249720 2.16

Please enter one of the following:

-----------------------------------------------

1 to insert a new student's information

2 to fetch and output a student's information

3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

5

Braedon s59285465 2.16 // This is the sorted list.

Brandon s94309699 2.98

Brenda s55440482 3.52

Clarence s95460736 2.26

Jazmin s72207014 3.95

Khalil s32135727 3.56

Konnor s95863124 3.97

Mckayla s83290265 3.03

Mikaela s04249720 2.16

Simon s59093432 2.55

Please enter one of the following:

-----------------------------------------------

1 to insert a new student's information

2 to fetch and output a student's information

3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

1

Please enter student data.

First the name:

glsjkhsjkh

Now the id

s74024893

Finally, the gpa

6.3

Please enter one of the following:

-----------------------------------------------

1 to insert a new student's information

2 to fetch and output a student's information

3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

5

Braedon s59285465 2.16

Brandon s94309699 2.98

Brenda s55440482 3.52

Clarence s95460736 2.26

glsjkhsjkh s74024893 6.3

Jazmin s72207014 3.95

Khalil s32135727 3.56

Konnor s95863124 3.97

Mckayla s83290265 3.03

Mikaela s04249720 2.16

Simon s59093432 2.55

Please enter one of the following:

-----------------------------------------------

1 to insert a new student's information

2 to fetch and output a student's information

3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

2

Please input a Student Name to search for

Simon

Simon s59093432 2.55

Please enter one of the following:

-----------------------------------------------

1 to insert a new student's information

2 to fetch and output a student's information

3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

3

Please input a Student Name to delete

Simon

Please enter one of the following:

-----------------------------------------------

1 to insert a new student's information

2 to fetch and output a student's information

3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

5

Braedon s59285465 2.16 // Sorted list, Simon is deleted.

Brandon s94309699 2.98

Brenda s55440482 3.52

Clarence s95460736 2.26

glsjkhsjkh s74024893 6.3

Jazmin s72207014 3.95

Khalil s32135727 3.56

Konnor s95863124 3.97

Mckayla s83290265 3.03

Mikaela s04249720 2.16

Please enter one of the following:

-----------------------------------------------

1 to insert a new student's information

2 to fetch and output a student's information

3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

6

Brenda s55440482 3.52 // The array. Notice, Simon is still here.

Brandon s94309699 2.98

Jazmin s72207014 3.95

Braedon s59285465 2.16

Clarence s95460736 2.26

Simon s59093432 2.55

glsjkhsjkh s74024893 6.3

Khalil s32135727 3.56

Mckayla s83290265 3.03

Konnor s95863124 3.97

Mikaela s04249720 2.16

Please enter one of the following:

-----------------------------------------------

1 to insert a new student's information

2 to fetch and output a student's information

3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

4

Input a Student Name of a record to update

Brenda

Please enter student data.

First the name:

Brenda // Update with same name.

Now the id

s84302859

Finally, the gpa

1.5

Please enter one of the following:

-----------------------------------------------

1 to insert a new student's information

2 to fetch and output a student's information

3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

5

Braedon s59285465 2.16

Brandon s94309699 2.98

Brenda s84302859 1.5 // Brenda now has updated info.

Clarence s95460736 2.26

glsjkhsjkh s74024893 6.3

Jazmin s72207014 3.95

Khalil s32135727 3.56

Konnor s95863124 3.97

Mckayla s83290265 3.03

Mikaela s04249720 2.16

Please enter one of the following:

-----------------------------------------------

1 to insert a new student's information

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3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

6

Brenda s84302859 1.5 // Brenda only appears once in array. If insert had not worked correctly she would be here twice.

Brandon s94309699 2.98

Jazmin s72207014 3.95

Braedon s59285465 2.16

Clarence s95460736 2.26

Simon s59093432 2.55

glsjkhsjkh s74024893 6.3

Khalil s32135727 3.56

Mckayla s83290265 3.03

Konnor s95863124 3.97

Mikaela s04249720 2.16

Please enter one of the following:

-----------------------------------------------

1 to insert a new student's information

2 to fetch and output a student's information

3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

4

Input a Student Name of a record to update

Konnor

Please enter student data.

First the name:

a;jkfh;ak

Now the id

s74920395

Finally, the gpa

2.6

Please enter one of the following:

-----------------------------------------------

1 to insert a new student's information

2 to fetch and output a student's information

3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

5

a;jkfh;ak s74920395 2.6 // Konnor is missing from sorted list.

Braedon s59285465 2.16

Brandon s94309699 2.98

Brenda s84302859 1.5

Clarence s95460736 2.26

glsjkhsjkh s74024893 6.3

Jazmin s72207014 3.95

Khalil s32135727 3.56

Mckayla s83290265 3.03

Mikaela s04249720 2.16

Please enter one of the following:

-----------------------------------------------

1 to insert a new student's information

2 to fetch and output a student's information

3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

6

Brenda s84302859 1.5

Brandon s94309699 2.98

Jazmin s72207014 3.95

Braedon s59285465 2.16

Clarence s95460736 2.26

Simon s59093432 2.55

a;jkfh;ak s74920395 2.6

glsjkhsjkh s74024893 6.3

Khalil s32135727 3.56

Mckayla s83290265 3.03

Konnor s95863124 3.97 // Konnor is deleted but replaced with a;jkfh;ak. He still has a node in the array though.

Mikaela s04249720 2.16

Please enter one of the following:

-----------------------------------------------

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2 to fetch and output a student's information

3 to delete a student's information

4 to update a student's information

5 to output the list in sorted order

6 to output the unsorted array.

7 to exit the program

-----------------------------------------------

7