Experiment No.1:

Name: Dhaigude Vaishnavi Santosh

// Online C++ compiler to run C++ program online #include <bits/stdc++.h>

using namespace std; struct name

{

char firstname[10]; char lastname[12];

};

struct profile

{

name student\_name; float SGPA;

int Roll\_no;

};

class student\_data

{

private:

struct profile std\_db[15]={"Shweta","Nikam",9.89,9,"Pratiksha","Mote",9.8,6,"Vaishnavi","Nalawade",9.54,13,"

Namrata","Shinde",9.12,4,"Supriya","Pitekar",9.65,3,"Tanuja","Nevase",9.5,5,"Sakshi,","Shitole",9

.01,12,"Shruti","Mane",9.2,11,"Swara","Kakade",9.08,2,"Siddhi","Jagtap",9.45,7,"Anuja","Durgade

",8.97,15,"Komal","Waghmode",9.55,14,"Gauri","Avhad",9.74,1,"Anushka","Vinchurkar",8.86,10," Ketki","Gurav",8.98,8};

int n=15; public:

void view(int n)

{

cout<<"\n\n Student Name SGPA Roll\n No. No.\n \n";

for(int i=0;i<=n-1;i++)

{

cout<<" "<<i+1<<" "<<std\_db[i].student\_name.firstname<<" "<<std\_db[i].student\_name.lastname;

cout<<" ->>- "<<std\_db[i].SGPA<<" ->>- "<<std\_db[i].Roll\_no<<"\n\n";

}

}

void search\_sgpa(float r) //Linear search on SGPA

{

cout<<"\n\n<Searching in SGPA using Linear Search...>\n ";

int t=1;

for(int i=0;i<n;i++)

{

if(std\_db[i].SGPA==r)

{

cout<<"\n\n#"<<t<<"Details of students with SGPA"<<std\_db[i].SGPA<<"-"; cout<<"\n\nstudent Name SGPA Roll\n No. No.\n \n";

cout<<" "<<i+1<<". "<<std\_db[i].student\_name.firstname<<" "<<std\_db[i].student\_name.lastname;

cout<<"\n ";

t++;

continue;

}

}

if(t==0)

{

cout<<"\n Student '"<<r<<"' Not found or input correct SGPA";

}

}

void sort\_names(int n) //inserion sort for sorting names

{

for(int k=1;k<n;k++)

{

struct profile temp=std\_db[k]; int j=k-1;

while (j>=0&& strcmp(temp.student\_name.firstname,std\_db[j].student\_name.firstname)<0) //Compare both the string character by character

{

std\_db[j+1]=std\_db[j]; j=j-1;

}

std\_db[j+1]=temp;

}

}

void sort\_SGPA(int l, int k) //Sorting SGPA using quick sorting

{

int r=k-1; if(l>=r)return; int i=l;

int j=r+1;

struct profile prec;

int p=std\_db[l].SGPA; //Select pivot element prec=std\_db[l]; //temporaily storing pivot record prec while(1)

{

do{i++;}while(std\_db[i].SGPA< p&& i<=r); do{j--;}while(std\_db[j].SGPA>p&&j>=l); if(i>=j)break;

struct profile temp; temp=std\_db[j];

std\_db[j]=std\_db[i]; std\_db[i]=temp;

}

std\_db[l]=std\_db[j]; std\_db[j]=prec; sort\_SGPA(l,j); //left list sort\_SGPA(j+1,r); //right list student\_data::view(10);

}

void sort\_RollNo() //sorting roll no. in ascending order using bubble sort

{

for(int i=0;i<n;i++)

{

for(int j=0;j<n-1;j++)

{

if((std\_db[j].Roll\_no)<(std\_db[j+1].Roll\_no)) //swapping

{

struct profile temp; temp=std\_db[j]; std\_db[j]=std\_db[j+1]; std\_db[j+1]=temp;

}

}

}

student\_data::view(n);

}

void search\_name()

{

cout<<"\nEnter student name to be searched:"; char search[10];

cin>>search;

cout<<"\n<Searching name using Binary Search >";

int lower=0,upper,mid; upper=n-1; mid=(lower+upper)/2; student\_data::sort\_names(n); while(lower<=upper)

{

if(strcmp(std\_db[mid].student\_name.firstname,search)<0)

{

lower=mid+1;

}

else if(strcmp(std\_db[mid].student\_name.firstname,search)==0)

{

cout<<"\n\n#Details of student with name"<<std\_db[mid].student\_name.firstname<<"-";

cout<<"\n\n Student name SGPA Roll\n

No..\n \n";

cout<< "1. "<<std\_db[mid].student\_name.firstname<<" "<<std\_db[mid].student\_name.lastname;

cout<<" ->>- "<<std\_db[mid].SGPA<<" ->>"<<std\_db[mid].Roll\_no; cout<<"\n ";

break;

}

else

{

}

upper=mid-1; mid=(lower+upper)/2;

}

if(lower>upper)

{

cout<<"\n Student"<<search<<"details not found ot input correct name";

}

}

};

int main()

{

struct profile std\_db[15]={"Shweta","Nikam",9.89,9,"Pratiksha","Mote",9.8,6,"Vaishnavi","Nalawade",9.54,13,"

Namrata","Shinde",9.12,4,"Supriya","Pitekar",9.65,3,"Tanuja","Nevase",9.5,5,"Sakshi,","Shitole",9

.01,12,"Shruti","Mane",9.2,11,"Swara","Kakade",9.08,2,"Siddhi","Jagtap",9.45,7,"Anuja","Durgade

",8.97,15,"Komal","Waghmode",9.55,14,"Gauri","Avhad",9.74,1,"Anushka","Vinchurkar",8.86,10," Ketki","Gurav",8.98,8};

student\_data std;

cout<<" \n\t\t SE IT

Student

Database \n

\n"; std.view(15); char stopApp; stopApp='Y','y';

//while (storeApp=='y') do

{

cout<<"\n\nSelect action from following:\n";

cout<<">1.VIEW RECORDS\n> 2.SORT ROLL NO.(using Bubble sort)\n>

1. SORT NAME(insertion sort)\n>4.SORT SGPA(Toppers)\n>5.SEARCH SGPA\n> 6.SEARCH NAME\n> 7.EXIT\n Enter choise(1/2/3/4/5/6/7/8/9):";

int choice; cin>>choice; switch(choice)

{

case 1:

std.view(15);

case 2:

case 3:

case 4:

case 5:

break;

cout<<"\n<sorting Roll no. wise using bubble sort...>"; std.sort\_RollNo();

break;

cout<<"\n<Sorting name alphabetically using insertion sort...>"; std.sort\_names(15);

std.view(15); break;

cout<<"\n Enter Student SGPA to be selected:"; float r;

cin>>r; std.search\_sgpa(r); break;

cout<<"\n Enter student SGPA to be selected:"; float r;

cin>>r; std.search\_sgpa(r); break;

case 6:

std.search\_name(); break;

case 7:

cout<<">Exited successfuk<\n--|ENF OF CODE|=="; return 0;

default:

cout<<"\n Invalid choice!" ;

}

cout<<"\n\n Do you want to continue(Y/N)?:"; cin>>stopApp;

if(stopApp=='N'|'n')

{

continue;

}

else exit;

}

while(toupper(stopApp)=='Y');

}

OUTPUT:

SE IT Student Database

Student Name SGPA Roll No. No.

1. Shweta Nikam ->>- 9.89 ->>- 9
2. Pratiksha Mote ->>- 9.8 ->>- 6
3. Vaishnavi Nalawade ->>- 9.54 ->>- 13
4. Namrata Shinde ->>- 9.12 ->>- 4
5. Supriya Pitekar ->>- 9.65 ->>- 3
6. Tanuja Nevase ->>- 9.5 ->>- 5
7. Sakshi, Shitole ->>- 9.01 ->>- 12
8. Shruti Mane ->>- 9.2 ->>- 11
9. Swara Kakade ->>- 9.08 ->>- 2
10. Siddhi Jagtap ->>- 9.45 ->>- 7
11. Anuja Durgade ->>- 8.97 ->>- 15
12. Komal Waghmode ->>- 9.55 ->>- 14
13. Gauri Avhad ->>- 9.74 ->>- 1
14. Anushka Vinchurkar ->>- 8.86 ->>- 10
15. Ketki Gurav ->>- 8.98 ->>- 8 Select action from following:

>1.VIEW RECORDS

* 2.SORT ROLL NO.(using Bubble sort)
* 3.SORT NAME(insertion sort)

>4.SORT SGPA(Toppers)

>5.SEARCH SGPA

* 6.SEARCH NAME
* 7.EXIT

Enter choise(1/2/3/4/5/6/7/8/9):1

Student Name SGPA Roll No. No.

1. Shweta Nikam ->>- 9.89 ->>- 9
2. Pratiksha Mote ->>- 9.8 ->>- 6
3. Vaishnavi Nalawade ->>- 9.54 ->>- 13
4. Namrata Shinde ->>- 9.12 ->>- 4
5. Supriya Pitekar ->>- 9.65 ->>- 3
6. Tanuja Nevse ->>- 9.5 ->>- 5
7. Sakshi, Shitole ->>- 9.01 ->>- 12
8. Shruti Mane ->>- 9.2 ->>- 11
9. Swara Kakade ->>- 9.08 ->>- 2
10. Siddhi Jagtap ->>- 9.45 ->>- 7
11. Anuja Durgade ->>- 8.97 ->>- 15
12. Komal Waghmode ->>- 9.55 ->>- 14
13. Gauri Avhad ->>- 9.74 ->>- 1
14. Anushka Vinchurkar ->>- 8.86 ->>- 10
15. Ketki Gurav ->>- 8.98 ->>- 8 Do you want to continue(Y/N)?:y Select action from following:

>1.VIEW RECORDS

* 2.SORT ROLL NO.(using Bubble sort)
* 3.SORT NAME(insertion sort)

>4.SORT SGPA(Toppers)

>5.SEARCH SGPA

* 6.SEARCH NAME
* 7.EXIT

Enter choise(1/2/3/4/5/6/7/8/9):2

<sorting Roll no. wise using bubble sort...> Student Name SGPA Roll

No. No.

1. Anuja Durgade ->>- 8.97 ->>- 15
2. Komal Waghmode ->>- 9.55 ->>- 14
3. Vaishnavi Nalawade ->>- 9.54 ->>- 13
4. Sakshi, Shitole ->>- 9.01 ->>- 12
5. Shruti Mane ->>- 9.2 ->>- 11
6. Anushka Vinchurkar ->>- 8.86 ->>- 10
7. Shweta Nikam ->>- 9.89 ->>- 9
8. Ketki Gurav ->>- 8.98 ->>- 8
9. Siddhi Jagtap ->>- 9.45 ->>- 7
10. Pratiksha Mote ->>- 9.8 ->>- 6
11. Tanuja Nevse ->>- 9.5 ->>- 5
12. Namrata Shinde ->>- 9.12 ->>- 4
13. Supriya Pitekar ->>- 9.65 ->>- 3
14. Swara Kakade ->>- 9.08 ->>- 2
15. Gauri Avhad ->>- 9.74 ->>- 1

Do you want to continue(Y/N)?:y Select action from following:

>1.VIEW RECORDS

* 2.SORT ROLL NO.(using Bubble sort)
* 3.SORT NAME(insertion sort)

>4.SORT SGPA(Toppers)

>5.SEARCH SGPA

* 6.SEARCH NAME
* 7.EXIT

Enter choise(1/2/3/4/5/6/7/8/9):3

<Sorting name alphabetically using insertion sort...> Student Name SGPA Roll

No. No.

1. Anuja Durgade ->>- 8.97 ->>- 15
2. Anushka Vinchurkar ->>- 8.86 ->>- 10
3. Gauri Avhad ->>- 9.74 ->>- 1
4. Ketki Gurav ->>- 8.98 ->>- 8
5. Komal Waghmode ->>- 9.55 ->>- 14
6. Namrata Shinde ->>- 9.12 ->>- 4
7. Pratiksha Mote ->>- 9.8 ->>- 6
8. Sakshi, Shitole ->>- 9.01 ->>- 12
9. Shruti Mane ->>- 9.2 ->>- 11
10. Shweta Nikam ->>- 9.89 ->>- 9
11. Siddhi Jagtap ->>- 9.45 ->>- 7
12. Supriya Pitekar ->>- 9.65 ->>- 3
13. Swara Kakade ->>- 9.08 ->>- 2
14. Tanuja Nevse ->>- 9.5 ->>- 5
15. Vaishnavi Nalawade ->>- 9.54 ->>- 13 Do you want to continue(Y/N)?:y

Select action from following:

>1.VIEW RECORDS

* 2.SORT ROLL NO.(using Bubble sort)
* 3.SORT NAME(insertion sort)

>4.SORT SGPA(Toppers)

>5.SEARCH SGPA

* 6.SEARCH NAME
* 7.EXIT

Enter choise(1/2/3/4/5/6/7/8/9):4

Student Name SGPA Roll No. No.

1. `Shweta Nikam ->>9.89 ->>- 9
2. Pratiksha Mote ->>- 9.8 ->>- 6
3. Vaishnavi Nalawade ->>- 9.54 ->>- 13
4. Namrata Shinde ->>- 9.12 ->>- 4
5. Supriya Pitekar ->>- 9.65 ->>- 3
6. Tanuja Nevse ->>- 9.5 ->>- 5
7. Sakshi, Shitole ->>- 9.01 ->>- 12
8. Shruti Mane ->>- 9.2 ->>- 11
9. Swara Kakade ->>- 9.08 ->>- 2
10. Siddhi Jagtap ->>- 9.45 ->>- 7 Do you want to continue(Y/N)?:y

Select action from following:

>1.VIEW RECORDS

* 2.SORT ROLL NO.(using Bubble sort)
* 3.SORT NAME(insertion sort)

>4.SORT SGPA(Toppers)

>5.SEARCH SGPA

* 6.SEARCH NAME
* 7.EXIT

Enter choise(1/2/3/4/5/6/7/8/9):5

Enter Student SGPA to be selected:8.98

<Searching in SGPA using Linear Search...>

#1Details of students with SGPA8.98- student Name SGPA Roll

No. No.

1. Ketki Gurav

Select action from following:

>1.VIEW RECORDS

* 2.SORT ROLL NO.(using Bubble sort)
* 3.SORT NAME(insertion sort)

>4.SORT SGPA(Toppers)

>5.SEARCH SGPA

* 6.SEARCH NAME
* 7.EXIT

Enter choise(1/2/3/4/5/6/7/8/9):6

Enter student name to be searched:Vaishnavi Nalawade Vaishnavi Nalawade ->>- 9.54 ->>- 13

Do you want to continue(Y/N)?:y

Select action from following:

>1.VIEW RECORDS

* 2.SORT ROLL NO.(using Bubble sort)
* 3.SORT NAME(insertion sort)

>4.SORT SGPA(Toppers)

>5.SEARCH SGPA

* 6.SEARCH NAME
* 7.EXIT

Enter choise(1/2/3/4/5/6/7/8/9):7

>Exited successfull<

--|ENF OF CODE|==

=== Code Execution Successful ===