1.Write a program to take an integer array from the user and give the user a choice to sort using bubble sort (or) selection sort.

//Sort the array elements according to the selected algorithm of the user and display the sorted array.

package sba4;

import java.util.Scanner;

public class Ques1 {

void bubbleSort(int arr[])

{

System.out.println("bubble sorting started");

int n = arr.length;

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

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

if (arr[j] > arr[j+1]) {

int temp = arr[j];

arr[j] = arr[j+1];

arr[j+1] = temp;

}}

void bubbleprint(int arr[]) {

}

System.out.println("bubble Sorted array :");

}

int n = arr.length; for (int i=0; i<n; ++i)

System.out.print(arr[i] + " ");

void selectionsort(int arr[]) {

System.out.println("selection sorting started");

int n =arr.length;

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

{

}}

int min\_idx=i;

for (int j=i+1; j<n;j++)

{

if (arr[min\_idx]>arr[j])

min\_idx=j;

}

int temp=arr[min\_idx];

arr[min\_idx]=arr[i];

arr[i]=temp;

void selectionprint(int arr[]) {

System.out.println("selection Sorted array");

int n = arr.length;

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

System.out.print(arr[i]+" ");

}

public static void main(String[] args) {

Scanner sc=new Scanner(System.in);

System.out.println("enter the number of elements");

int n=sc.nextInt();

int [] arr=new int[n];

System.out.println("enter the numbers");

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

arr[i]=sc.nextInt();

}

System.out.println("enter the mode of sorting :either press '1' for bubble sort or '2' for selection sort");

int a=sc.nextInt();

Ques1 ob=new Ques1();

if(a==1)

{ ob.bubbleSort(arr);

ob.bubbleprint(arr); }

else{

ob.selectionsort(arr);

ob.selectionprint(arr);

}

} }

//Output

2. Write a program to implement insertion sort

package sba4;

public class Ques2 {

public static void insertionSort(int array[]) {

int n=array.length;

for (int j =1; j<n;j++) {

int key= array[j];

int i=j-1;

while ((i>-1)&&(array[i]>key)){

array [i+1] = array [i];

i--; }

array[i+1] = key;

}

}

public static void main(String a[]){

int[] arr1 = {2,5,0,12,29,13,62};

System.out.println("Before Insertion Sort");

for(int i:arr1){

System.out.print(i+" "); }

System.out.println();

insertionSort(arr1);//sorting array using insertion sort

System.out.println("After Insertion Sort");

for(int i:arr1){

System.out.print(i+" "); }

}

}

//Output

3. Write a pgm to implement hash table and add add atleast 4 values into it, implement the putIfAbsent() method.

package sba4;

import java.util.Hashtable;

public class Ques3 {

public static void main(String[] args) {

Hashtable<Integer,String> map=new Hashtable<Integer,String>();

map.put(100,"Amit");

map.put(102,"Ravi");

map.put(101,"Vijay");

map.put(103,"Rahul");

System.out.println("Before remove: "+ map); // Remove value for key 102

map.remove(102);

System.out.println("After remove: "+ map);

//checking empty or not

System.out.println("map is empty? "+map.isEmpty());

//Here, we specify the if and else statement as arguments of the method System.out.println(map.getOrDefault(101, "Not Found"));

System.out.println(map.getOrDefault(105, "Not Found"));

//Inserts, as the specified pair is unique

map.putIfAbsent(102,"Gaurav");

System.out.println("Updated Map: "+map);

//Returns the current value, as the specified pair already exist

map.putIfAbsent(101,"Dhamu");

System.out.println("Updated Map: "+map);

//Replace the value at key 100

map.replace(100,"Kelu");

System.out.println("Updated Map: "+map);

//Checking values in map

System.out.println("Dhamu in map? "+map.contains("Dhamu"));

System.out.println("Kelu in map? "+map.contains("Kelu"));

//Checking key in map and getting the value

if(map.containsKey(101)==true) {

System.out.println("Vlaue of key 101 is "+map.get(101)); }

//printing all values in map

System.out.println(map.values());

if(map.replace(103,"rahul","Raju")==true) {

System.out.println("Replaced Rahul...");

System.out.println("Updated Map: "+map); }

}

//Output

4.Create a class of Books with attributes: a)id

b)name

c)author

d)publisher

e)quantity sold.

Implement a Hashtable to implement the objects of Books type. Print all the details of books by traversing through the Hashtable

package sba4;

import java.util.Hashtable;

import java.util.Map;

class Book {

int id;

String name,author,publisher;

int quantity;

public Book(int id, String name, String author, String publisher, int quantity) {

this.id = id;

this.name = name; this.author = author; this.publisher = publisher; this.quantity = quantity;

}

}

public class Ques4 {

public static void main(String[] args) { //Creating map of Books

Hashtable<Integer,Book> map=new Hashtable<Integer,Book>();

//Creating Books

Book b1=new Book(101,"Let us C","Yashwant Kanetkar","BPB",8);

Book b2=new Book(102,"Data Communications & Networking","Forouzan","Mc Graw Hill",4);

Book b3=new Book(103,"Operating System","Galvin","Wiley",6);

//Adding Books to map

map.put(1,b1);

map.put(2,b2);

map.put(3,b3);

//Traversing map

for(Map.Entry<Integer, Book> z:map.entrySet()){

"+b.quantity);

int key=z.getKey(); //key=3

Book b=z.getValue(); //b=b3

System.out.println(key+" Details:");

System.out.println(b.id+" "+b.name+" "+b.author+" "+b.publisher+"

}

} }

//Output