//Assignment no 10

import java.util.Scanner;

/// Java implementation of ShellSort

class ShellSort

{

/\* An utility function to print array of size n\*/

static void printArray(int arr[])

{

int n = arr.length;

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

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

System.out.println();

}

/\* function to sort arr using shellSort \*/

int sort(int arr[])

{

int n = arr.length;

// Start with a big gap, then reduce the gap

for (int gap = n/2; gap > 0; gap /= 2)

{

// Do a gapped insertion sort for this gap size.

// The first gap elements a[0..gap-1] are already

// in gapped order keep adding one more element

// until the entire array is gap sorted

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

{

// add a[i] to the elements that have been gap

// sorted save a[i] in temp and make a hole at

// position i

int temp = arr[i];

// shift earlier gap-sorted elements up until

// the correct location for a[i] is found

int j;

for (j = i; j >= gap && arr[j - gap] > temp; j -= gap)

arr[j] = arr[j - gap];

// put temp (the original a[i]) in its correct

// location

arr[j] = temp;

}

}

return 0;

}

// Driver method

public static void main(String args[])

{

int n;

Scanner sc=new Scanner(System.in);

System.out.print("Enter the number of elements you want to store: ");

//reading the number of elements from the that we want to enter

n=sc.nextInt();

//creates an array in the memory of length 10

int[] arr = new int[n];

System.out.println("Enter the elements of the array: ");

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

{

//reading array elements from the user

arr[i]=sc.nextInt();

}

System.out.println("Enter Array before sorting");

//int arr[] = {12, 34, 54, 2, 3};

System.out.println("Array before sorting");

printArray(arr);

ShellSort ob = new ShellSort();

ob.sort(arr);

System.out.println("Array after sorting");

printArray(arr);

}

}

output:

gescoe@gescoe-OptiPlex-3010:~/Desktop/SE-A-55$ javac ShellSort.java

gescoe@gescoe-OptiPlex-3010:~/Desktop/SE-A-55$ java ShellSort

Enter the number of elements you want to store: 5

Enter the elements of the array:

4

7

2

8

5

Enter Array before sorting

Array before sorting

4 7 2 8 5

Array after sorting

2 4 5 7 8

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