Buble Sort

```java
import java.util.Scanner;

public class BubbleSort
{
   public static void main(String[] args)
   {
      //   Buat Objek Scanner
      Scanner scan = new Scanner(System.in);

      //   Input jumlah Data
      System.out.print("Masukkan jumlah Data : ");    int jlh_data = scan.nextInt();

      //   Input nilai tiap Data
      int[] data = new int[jlh_data];      //   Array untuk menampung nilai tiap
Data
      System.out.println();
      for(int a = 0; a < jlh_data; a++)
      {
         System.out.print("Nilai Data ke-"+(a+1)+" : ");
         data[a] = scan.nextInt();
      }

      //   Tampilkan Data Sebelum di Sorting
      System.out.println("\nData Sebelum di Sorting");
      for(int a = 0; a < jlh_data; a++)
         System.out.print(data[a]+" ");

      //   Proses Bubble Sort
      System.out.println("\nProses Bubble Sort");
      for(int a = 0; a < jlh_data; a++)
      {
         System.out.println("Iterasi ke-"+(a+1)+" :");
         for(int b = 0; b < jlh_data; b++)
            System.out.print(data[b]+"  ");

         System.out.println("   Bandingkan "+data[0]+" dengan "+data[1]);
         for(int b = 0; b < jlh_data-1; b++)
         {
            String pesan = "   Tidak ada pertukaran";
            if(data[b] > data[b+1])
            {
               //   proses pertukaran nilai Data
               pesan = "   Data "+data[b]+" ditukar dengan "+data[b+1];
               int temp = data[b];      //   Variable Sebagai pihak ketiga
               data[b] = data[b+1];
               data[b+1] = temp;
```

```
        }

        if(b < jlh_data-(a+1))
        {
          for(int c = 0; c < jlh_data; c++)
            System.out.print(data[c]+" ");

          System.out.println(pesan);;
        }
      }

      System.out.println("\n");
    }

    //   Tampilkan Data Setelah di Sorting
    System.out.print("Data Setelah di Sorting : ");
    for(int a = 0; a < jlh_data; a++)
      System.out.print(data[a]+" ");

  }
}
```

Selection Sort

```
import java.util.Scanner;



public class SelectionSort
{
  public static void main(String[] args)
  {
    //   Buat Objek Scanner
    Scanner scan = new Scanner(System.in);

    //   Input jumlah Data
    System.out.print("Masukkan jumlah Data : ");   int jlh_data = scan.nextInt();

    //   Input nilai tiap Data
    int[] data = new int[jlh_data];     //   Array untuk nilai tiap Data
    System.out.println();
    for(int x = 0; x < jlh_data; x++)
    {
      System.out.print("Input nilai Data ke-"+(x+1)+" : ");
      data[x] = scan.nextInt();
    }
```

```java
    //   Tampilkan Data Sebelum di sorting
    System.out.println();
    System.out.print("Data Sebelum di Sorting : ");
    for(int x = 0; x < jlh_data; x++)
       System.out.print(data[x]+" ");

    //   Proses Selection Sort
    System.out.println("\n\nProses Selection Sort");
    for(int x = 0; x < jlh_data-1; x++)
    {
       System.out.println("Iterasi ke-"+(x+1)+" : ");
       for(int y = 0; y < jlh_data; y++)
          System.out.print(data[y]+" ");

       System.out.println("   Apakah Data "+data[x]+" sudah benar pada
urutannya?");

       boolean tukar = false;
       int index = 0;
       int min = data[x];
       String pesan = "   Tidak Ada Pertukaran";
       for(int y = x+1; y < jlh_data; y++)
       {
          if(min > data[y])
          {
             tukar = true;
             index = y;
             min = data[y];

          }
       }

       if(tukar == true)
       {
          //   Pertukaran Data
          pesan = "   Data "+data[x]+" ditukar dengan Data "+data[index];
          int temp = data[x];
          data[x] = data[index];
          data[index] = temp;
       }

       for(int y = 0; y < jlh_data; y++)
          System.out.print(data[y]+" ");

       System.out.println(pesan+"\n");
    }

    //   Tampilkan Data Setelah di Sorting
    System.out.print("Data Setelah di sorting : ");
```

```java
        for(int x = 0; x < jlh_data; x++)
           System.out.print(data[x]+" ");
   }
}
```

Insertion Sort

```java
import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.io.IOException;
import java.util.Random;


public class InsertionSort
{
   public static void main(String[] args) throws IOException
   {
     // Objek BufferedReader
     BufferedReader dataIn = new BufferedReader(new
InputStreamReader(System.in));

     // Input jumlah Data
     System.out.print("Masukkan jumlah Data : ");   int jlh_data =
Integer.parseInt(dataIn.readLine());

     // Array Data untuk menampung nilai Data
     int[] data = new int[jlh_data];

     // Menu Pengisian data
     System.out.println("\nMenu Pengisian Data");
     System.out.println("1. Di input oleh user");
     System.out.println("2. Di isi oleh program");
     System.out.print("Pilihan : ");    int isi_data =
Integer.parseInt(dataIn.readLine());

     switch(isi_data)
     {
       case 1  :  // Pengisian Data oleh si User
             System.out.println();
             for(int a = 0; a < jlh_data; a++)
             {
                System.out.print("Data ke-"+(a+1)+" : ");  data[a] =
Integer.parseInt(dataIn.readLine());
             }

                break;
```

```java
    case 2 :  // Pengisian Data oleh program --> di isi secara acak
          System.out.println();
          for(int a = 0; a < jlh_data; a++)
             data[a] = new Random().nextInt(201);

          // Tampilkan Data yang di isi oleh program
          System.out.print("Data : ");
          for(int a = 0; a < jlh_data; a++)
             System.out.print(data[a]+" ");

             break;

    default :  System.out.println("\nPilihan tidak tersedia");
}

// Proses Insertion Sort
System.out.println("\nProses Insertion Sort");
for(int a = 0; a < jlh_data-1; a++)
{
   System.out.println("Iterasi "+(a+1));
   for(int b = 0; b < jlh_data; b++)
      System.out.print(data[b]+"\t");

   System.out.print("   --> Bandingkan "+data[a+1]+" dengan "+data[a]);

   for(int b = a+1; b > 0; b--)
   {
      String pesan = "   --> Tidak ada pertukaran";
      if(data[b] < data[b-1])
      {
         pesan = "   --> "+data[b]+" tukar posisi dengan "+data[b-1];

         // Proses Pertukaran
         int temp = data[b];
         data[b] = data[b-1];
         data[b-1] = temp;

         System.out.println();
         for(int c = 0; c < jlh_data; c++)
            System.out.print(data[c]+"\t");

         System.out.print(pesan);
      }

      else
      {
         System.out.println();
         for(int c = 0; c < jlh_data; c++)
```

```java
                System.out.print(data[c]+"\t");

            System.out.print(pesan);
                break;
            }
        }
        System.out.println("\n");
    }

    //  Tampilkan hasil Sorting
    System.out.print("\nData setelah di Sorting : ");
    for(int a = 0; a < jlh_data; a++)
        System.out.print(data[a]+" ");

  }
}
```