Name : Azaria Cindy Sahasika
Number Id : 2341760169 / 06
Class : 1G – Business Information System
Lesson : Algorithm and Data Structure
Material : Material 5
Github Link : https://github.com/azariacindy/algorithm-ds

1. Data = {23,35,14,7,67,89,20}
   Gambarkan proses penyelesaian kasus pengurutan data di atas dengan menggunakan algoritma
   - Bubble Sort untuk pengurutan descending
     Data = {23,35,14,7,67,89,20}

     Tahap 1

6 langkah	= 23 →35 swap	{23,35,14,7,67,89,20}
	= 23 →14 no swap	{35,23,14,7,67,89,20}
	= 14 → 7 no swap	{35,23,14,7,67,89,20}
	= 7 → 67 swap	{35,23,14,67,7,89,20}
	= 7 → 89 swap	{35,23,14,67,89,7,20}
	= 7 → 20 swap	{35,23,14,67,89,20,7}

     Tahap 2

7 langkah	= 35 → 23 no swap	{35,23,14,67,89,20,7}
	= 23 → 14 no swap	{35,23,14,67,89,20,7}
	= 14 → 67 swap	{35,23,14,67,89,20,7}
	= 14 → 89 swap	{35,23,67,14,89,20,7}
	= 14 → 89 swap	{35,23,67,89,14,20,7}
	= 14 → 20 swap	{35,23,67,89, 20,14,7}
	= 14 → 7 no swap	{35,23,67,89, 20,14,7}

     Tahap 3

6 langkah	= 35 → 23 no swap	{35,23,67,89, 20,14,7}
	= 23 → 67 swap	{35,23,67,89, 20,14,7}
	= 23 → 89 swap	{35,67,23,89,20,14,7}
	= 23 → 20 no swap	{35,67,89,23,20,14,7}
	= 20 → 14 no swap	{35,67,89,23,20,14,7}
	= 14 → 7 no swap	{35,67,89,23,20,14,7}

     Tahap 4

6 langkah	= 35 → 67 swap	{35,67,89,23,20,14,7}
	= 35 → 89 swap	{67,35,89,23,20,14,7}
	= 35 → 23 no swap	{67,89,35,23,20,14,7}
	= 23 → 20 no swap	{67,89,35,23,20,14,7}
	= 20 → 14 no swap	{67,89,35,23,20,14,7}
	= 14 → 7 no swap	{67,89,35,23,20,14,7}

     Tahap 5

6 langkah		
	= 67 → 89 swap	{67,89,35,23,20,14,7}
	= 67 → 35 no swap	{89,67,35,23,20,14,7}
	= 35 → 23 no swap	{89,67,35,23,20,14,7}
	= 23 → 20 no swap	{89,67,35,23,20,14,7}
	= 20 → 14 no swap	{89,67,35,23,20,14,7}
	= 14 → 7 no swap	{89,67,35,23,20,14,7}

- Selection Sort untuk pengurutan ascending

  Data = {23,35,14,7,67,89,20}

  Tahap 0 = {23,35,14,7,67,89,20}
  Index = 0 ; id = 0
  Min awl = 23
  → 35 > 23
  → 14 < 23
  → 7 < 23 (min = 7, id = 3)
  → 67 > 23
  → 89 > 23
  → 20 < 23

  Tahap 1 = {7,35,14,23,67,89,20}
  Index = 1 ; id = 1
  Min awl = 35
  → 14 < 35 (min = 14, id = 2)
  → 23 < 35
  → 67 > 35
  → 89 > 35
  → 20 < 35

  Tahap 2 = {7,14,35,23,67,89,20}
  Index = 2 ; id = 2
  Min awal = 35
  → 23 < 35
  → 67 > 35
  → 89 > 35
  → 20 < 35 (min = 20, id = 6)

  Tahap 3 = {7,14,20,23,67,89,35}
  Index = 2 ; id = 2
  Min awal = 20
  → 23 > 20 (min = 23, id = 3)
  → 67 > 20
  → 89 > 20
  → 35 > 20

  Tahap 4 = {7,14,20,23,67,89,35}
  Index = 3 ; id = 3
  Min awal = 23
  → 67 > 23
  → 89 > 23
  → 35 > 23 (min = 35, id = 6)

  Tahap 5 = {7,14,20,23,35,67,89}
  Index = 4 ; id = 4
  Min awal = 35
  → 67 > 35
  → 89 > 35

- Insertion Sort untuk pengurutan descending
  Data = {23,35,14,7,67,89,20}
  Tahap 1 = {23,35,14,7,67,89,20}
  Tahap 2 = {23,35,14,7,67,89,20}
  Tahap 3 = {35,23,14,7,67,89,20}
  Tahap 4 = {35,23,14,7,67,89,20}
  Tahap 5 = {35,23,14,7,67,89,20}
  Tahap 6 = {67,35,23,14,7,89,20}
  Tahap 7 = {89,67,35,23,14,7,20}
  Tahap 8 = {89,67,35,20,23,14,7}

2. Jelaskan tindakan yang dilakukan pada algoritma Bubble Sort dan Selection Sort jika menemukan elemen data yang sama nilainya! Contoh = {22,33,45,17,33}
   ➔ Jika Bubble sort menemukan angka yang sama nilainya, maka bubble sort akan menukarkan angka tersebut seperti biasa. Makanya angka dengan nilai sama bisa berada dalam urutan yang berbeda setelah proses pengurutan.
   ➔ Jika Selection sort menemukan engka yang sama nilainya, maka selection sort akan tetap menukarkna angka tersebut seperti bisa sama seperti bubble sort. Makanya angka dengan nilai sama bisa berada dalam urutan yang berbeda setelah proses pengurutan.