

9 Mar, 2023

Homework for Mar 5th:

```
J Main.java 1 x
J Main.java > Main > main(String[])
12   for(i=0;i<=(n-1);i++)
13       a[i] = sc.nextInt();
14
15   System.out.println("Array contents are as below:");
16   for(i=0;i<=(n-1);i++)
17       System.out.println(a[i]);
18
19   int sum_even_places=0, sum_odd_places=0;
20
21   for(i=0;i<=(n-1);i+=2)
22       sum_even_places += a[i]; // sum = sum + a[i];
23   System.out.println("Sum of the array's even elements is as below:");
24   System.out.println(sum_even_places);
25
26   i = 1;
27   while (i<=n-1)
28   {
29       sum_odd_places += a[i];
30       i = i+2;
31   }
32   System.out.println("Sum of the array's odd elements is as below:");
33   System.out.println(sum_odd_places);
34
35 }
36
```

Handwritten notes on the code:

- $n=8$
- $i=0, 2, 4, 6, 8$
- $Sum = 0 + 10 + 30 + 50 + 70$
- Diagram of array a with indices 0 to 7:

10	20	30	40	50	60	70	80
0	1	2	3	4	5	6	7
- $Sum_{odd} = 0 + 20 + 40 + 60 + 80$
- $i=1, 3, 5, 7, 9$

//WAP to check if integer array is in Ascending Order

① a

0	1	2	3	4
10	20	30	40	50

✓ $n=5$

a

0	1	2	3	4
10	20	30	50	40

✗

① Cmp 10 & 20

If $10 < 20$, then cmp 20 & 30

If $20 < 30$, then cmp 30 & 40

If $30 < 40$, then cmp 40 & 50

If $40 < 50$, stop.

Ascending

} Rpt this
till $i = n-2$
If condition fails
anytime,
then break loop
& conclude not
in Asc. ord.

flag = 0

for ($i = 0; i \leq n-2; i++$)

if $a[i] < a[i+1]$
flag = 0
continue

else
flag = 1
break

if flag == 0:

Asc.

else

Not Asc.

```
J Main.java 1 x
J Main.java > Main > main(String[])
55 for (i=0; i<=(n-1); i++) // displaying the array elements
56     System.out.println(a[i]);
57
58     for (i=0; i<=n-2; i++)
59     {
60         if (a[i]<a[i+1])
61         {
62             flag=0;
63             continue;
64         }
65         else
66         {
67             flag=1;
68             break;
69         }
70     }
71     if (flag==0)
72         System.out.println("Array is sorted.");
73     else
74         System.out.println("Array is not sorted.");
75
76 }
77 }
```

Handwritten annotations:

- Array a with indices 0, 1, 2, 3 and values 10, 20, 30, 40.
- $n=4$
- For loop condition $i \leq n-2$ with a handwritten $i=0, 1, 2, 3$ and $flag=0$.

```
J Main.java 1
J Main.java > Main > main(String[])
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56     System.out.println(a[i]);
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58     for (i=0; i<=n-2; i++)
59     {
60         if (a[i]<a[i+1])
61         {
62             flag=0;
63             continue;
64         }
65         else
66         {
67             flag=1;
68             break; // break terminates the current loop
69         }
70     }
71     if (flag==0)
72         System.out.println("Array is sorted.");
73     else
74         System.out.println("Array is not sorted.");
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76 }
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```

Handwritten annotations:

- Array a with indices 0, 1, 2, 3 and values 10, 20, 40, 30.
- $n=4$
- For loop condition $i \leq n-2$ with a handwritten $i=0, 1, 2$ and $flag=0$.
- Break statement with a handwritten note: "break terminates the current loop".

WAP to find min in the array.

	0	1	2	3	4	5	$n=6$
a	<u>2</u>	10	12	1	0	.5	

$\text{min} = a[0]$

$\text{min} = a[0]$ i.e. 2

for ($i=1$; $i \leq n-1$; $++$)

if $\text{min} > a[i]$

$\text{min} = a[i]$

If $\text{min} > a[1]$ i.e. 10

$\text{min} > a[1]$
then $\text{min} = a[1]$

Soln (min)

If $\text{min} > a[2]$ i.e. 12

$\text{min} > a[2]$
then $\text{min} = a[2]$

If $\text{min} > a[3]$ i.e. 1

$\text{min} > a[3]$
then $\text{min} = a[3] = 1$

If $\text{min} > a[4]$ i.e. 0

$\text{min} > a[4]$
then $\text{min} = a[4] = 0$

If $\text{min} > a[5]$

$\text{min} > a[5]$
then $\text{min} = a[5]$

Soln (min)

WAP to find min in the array.

$\min \neq 0$
 $i = 1, 2, 3, 4, 5, 6$

	0	1	2	3	4	5	$n=6$
a	<u>2</u>	10	12	1	0	.5	

$\min = a[0]$ i.e. 2

$\min = a[0]$
 $\text{for } (i=1; i \leq n-1; i++)$
if $\min > a[i]$
 $\min = a[i]$

If $\min > a[1]$ i.e. 10
2 then $\min = a[1]$

Soln (min)
0

If $\min > a[2]$ i.e. 12
2 then $\min = a[2]$

If $\min > a[3]$ i.e. 1

2D Arrays

	c0	c1	c2	c3
r0	10	20	30	40
r1	50	60	70	80

2 x 4

Left to right

Top to Bottom

```
int a[][] = new int[2][4];
```

```
for( r=0; r<2 ;r++)
```

```
    for(c=0; c<4; c++)
```

```
        a[r][c] = sc.nextInt();
```

	c0	c1	c2	c3
r0	10	20	30	40
r1	50	60	70	80

2x4

Left to right
Top to Bottom

```
int a[2][4] = new int[2][4];
```

```
for( r=0; r<2; r++)
    for( c=0; c<4; c++)
        a[r][c] = sc.nextInt();
```

r=0x2

c=0x4
0x2x4

Hlw:

① Implement min of array pgm.

② ———— 11 ———— max ———— 11 ————

③ ———— 4 ———— above 2D array pgm.

————— X —————