

CHAPTER
ANS-07
อาเรย์หนึ่งมิติ
(One Dimensional Arrays)
โจทย์ข้อที่ 1 [ระดับง่าย]

```
3
14
9
Index Out of Bounds
2
7
5
21
```

0	1	2	3	4	5	6	7	8	9
0	4	4	6	7	1	2	5	7	10

โจทย์ข้อที่ 2 [ระดับง่าย]

- 1) `long num[] = new long[200];`
- 2) `int dice[] = new int[6];`
- 3) `double avgGrade[] = new double[451];`
- 4) `String grade[] = new String[369];`
- 5) `boolean x[] = new boolean[11];`
- 6) `long merge[] = new long[num.length + dice.length];`

โจทย์ข้อที่ 3 [ระดับง่าย]

- 1) `int x = num[49];`
- 2) `int y = num[50];`
- 3) `char c = code[code.length - 1];`
- 4) `bank[12] = var1;`
- 5) `bank[0] = var2;`
- 6) `bank[bank.length - 2] = var3;`

โจทย์ข้อที่ 4 [ระดับง่าย-ปานกลาง]

```
1)
int n[] = { 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 };
for (int i = 0; i < n.length; i++) {
    System.out.println(n[i]);
}
```

```
2)
int m[] = new int[1000];
for (int i = 0; i < m.length; i++) {
    m[i] = i + 1;
}
```

```
3) double a[] = new double[100];
    for (int i = 0; i < a.length; i++) {
        System.out.print("Enter a[" + i + " ]");
        a[i] = kb.nextDouble();
    }
```

```
4) int odd = 0, even = 0;
    for (int i = 0; i < x.length; i++) {
        if (x[i] % 2 == 0) even++;
        else odd++;
    }
    System.out.println("Odd Number: " + odd);
    System.out.println("Even Number: " + even);
```

```
5) System.out.print("Enter x: ");
    int x = kb.nextInt()
    int index = -1;
    for (int i = 0; i < num.length; i++) {
        if(num[i] == x) index = i; break;
    }
    System.out.println("First Index: " + index);
```

โจทย์ข้อที่ 5 [ระดับปานกลาง]

```
import java.util.Scanner;
public class MergeArrays {
    public static void main(String[] args) {
        int a[] = { 1, 2, 3, 4, 5, 6, 7, 8, 9 };
        int b[] = { 1, 4, 6, 8, 10, 12 };

        int ab[] = new int[a.length + b.length];
        for (int i = 0; i < a.length; i++) {
            ab[i] = a[i];
        }
        for (int i = a.length; i < ab.length; i++) {
            ab[i] = b[i - a.length];
        }
        for (int i = 0; i < ab.length; i++) {
            System.out.println(ab[i]);
        }
    } //End of main
} //End of class
```

โจทย์ข้อที่ 6 [ระดับยาก]

```
import java.util.Scanner;
public class SplitArray {
    public static void main(String[] args) {
        int num[] = {95, 1, 6, 34, 5, 9, 123, -2, 57, 82, 12, 79, 45, 34, 1};

        Scanner kb = new Scanner(System.in);
        System.out.print("Enter x: ");
        int x = kb.nextInt();
        int count = 0, a = 0, b = 0;
        for (int i = 0; i < num.length; i++) {
            if (num[i] >= x) count++;
        }
        int upper[] = new int[count];
        int lower[] = new int[num.length - count];
        for (int i = 0; i < num.length; i++) {
            if (num[i] >= x) upper[a++] = num[i];
            else lower[b++] = num[i];
        }
    } //End of main
} //End of class
```

โจทย์ข้อที่ 7 [ระดับยาก]

```
import java.util.Scanner;
public class ReverseArray {
    public static void main(String[] args) {
        int num[] = {95, 1, 6, 34, 5, 9, 123, -2, 57, 82, 12, 79, 45, 34, 1};

        for (int i = 0; i < num.length / 2; i++) {
            int temp = num[i];
            num[i] = num[num.length - i - 1];
            num[num.length - i - 1] = temp;
        }
    } //End of main
} //End of class
```

โจทย์ข้อที่ 8 [ระดับยาก]

```
import java.util.Scanner;
public class EqualityOfArrays {
    public static void main(String[] args) {
        int a[] = { 1, 2, 3, 4, 5, 6, 7 }, b[] = { 1, 2, 3, 5, 5, 7, 7 };

        if (a.length == b.length) {
            int count = 0;
            for (i = 0; i < a.length; i++) {
                if (a[i] == b[i]) count++;
            }
            if (count == a.length) System.out.println("A = B");
            else System.out.println("A != B");
        } else {
            System.out.println("A != B");
        }
    }
} //End of main
} //End of class
```

โจทย์ข้อที่ 9 [ระดับยาก]

```
import java.util.Scanner;
public class LastSecondSearch {
    public static void main(String[] args) {
        int num[] = { 3, 2, 1, 10, 2, 8, 3, 2, 1, 1, 8, 5, 10, 11, 7, 6, 10 };

        Scanner kb = new Scanner(System.in);
        System.out.print("Enter number: ");
        int key = kb.nextInt();
        int index = -1, count = 0;
        for (int i = num.length - 1; i >= 0; i--) {
            if (key == num[i]) count++;
            if (count == 2) {
                index = i; break;
            }
        }
        System.out.println("Second Last index: " + index);
    }
} //End of main
} //End of class
```

โจทย์ข้อที่ 10 [ระดับง่าย]

การจัดเรียงแบบเลือก

รอบที่ 1

30	45	23	2	19	14	5	9	99
----	----	----	---	----	----	---	---	----

รอบที่ 2

30	9	23	2	19	14	5	45	99
----	---	----	---	----	----	---	----	----

รอบที่ 3

5	9	23	2	19	14	30	45	99
---	---	----	---	----	----	----	----	----

รอบที่ 4

5	9	14	2	19	23	30	45	99
---	---	----	---	----	----	----	----	----

รอบที่ 5

5	9	14	2	19	23	30	45	99
---	---	----	---	----	----	----	----	----

รอบที่ 6

5	9	2	14	19	23	30	45	99
---	---	---	----	----	----	----	----	----

รอบที่ 7

5	2	9	14	19	23	30	45	99
---	---	---	----	----	----	----	----	----

รอบที่ 8

2	5	9	14	19	23	30	45	99
---	---	---	----	----	----	----	----	----

การจัดเรียงแบบฟอง

รอบที่ 1

30	45	23	2	19	14	5	99	9
----	----	----	---	----	----	---	----	---

30	23	45	2	19	14	5	99	9
----	----	----	---	----	----	---	----	---

30	23	2	45	19	14	5	99	9
----	----	---	----	----	----	---	----	---

30	23	2	19	45	14	5	99	9
----	----	---	----	----	----	---	----	---

30	23	2	19	14	45	5	99	9
----	----	---	----	----	----	---	----	---

30	23	2	19	14	5	45	99	9
----	----	---	----	----	---	----	----	---

30	23	2	19	14	5	45	99	9
----	----	---	----	----	---	----	----	---

30	23	2	19	14	5	45	9	99
----	----	---	----	----	---	----	---	----

รอบที่ 2

23	30	2	19	14	5	45	9	99
----	----	---	----	----	---	----	---	----

23	2	30	19	14	5	45	9	99
23	2	19	30	14	5	45	9	99
23	2	19	14	30	5	45	9	99
23	2	19	14	5	30	45	9	99
23	2	19	14	5	30	45	9	99
23	2	19	14	5	30	9	45	99

โจทย์ข้อที่ 11 [ระดับง่าย]

```
int x[] = {30, 45, 23, 2, 19, 14, 5, 99, 9};
```

30	45	23	2	19	14	5	99	9
----	----	----	---	----	----	---	----	---

จัดเรียงข้อมูล

2	5	9	14	19	23	30	45	99
---	---	---	----	----	----	----	----	----

รอบที่ 1

2	5	9	14	19	23	30	45	99
---	---	---	----	----	----	----	----	----

left

mid

right

รอบที่ 2

2	5	9	14
---	---	---	----

left

mid

รอบที่ 3

9	14
---	----

Left

right

mid

รอบที่ 4

14

Left

right

mid

การสับคั่นแบบทวิภาคใช้เวลา 4 รอบในการสับคั่น
การสับคั่นแบบลำดับใช้เวลา 6 รอบในการสับคั่น
ดังนั้น การสับคั่นแบบทวิภาคทำงานได้เร็วกว่า

โจทย์ข้อที่ 12 [ระดับยาก]

```

import java.util.Scanner;
import java.io.*;
public class SortMonthByBirthDate {
    public static void main(String[] args) throws IOException {
        String month[] = { "January", "February", "March",
                           "April", "May", "June",
                           "July", "August", "September",
                           "October", "November", "December" };

        int count[] = new int[12];

        Scanner in = new Scanner(new File("birthdate.txt"));
        while (in.hasNext()) {
            String d = in.next();
            int a = d.indexOf("-");
            int b = d.lastIndexOf("-");
            int m = Integer.parseInt(d.substring(a + 1, b));
            count[m - 1]++;
        }

        for (int i = count.length - 1; i >= 1; i--) {
            int minIndex = 0;
            for (int j = 0; j <= i; j++)
                if (count[j] < count[minIndex]) minIndex = j;
            int temp = count[i];
            count[i] = count[minIndex];
            count[minIndex] = temp;
            String stemp = month[i];
            month[i] = month[minIndex];
            month[minIndex] = stemp;
        }

        for (int i = 0; i < month.length; i++) {
            System.out.println(month[i] + " [" + count[i] + " people]");
        }
    } //End of main
} //End of class

```

โจทย์ข้อที่ 13 [ระดับเทพ]

```

import java.io.*;
import java.util.Scanner;
public class ScoreCalculator {
    public static void main(String[] args) throws IOException {

```

//สร้างตัวอ่านชื่อ in1 ...

```

Scanner in1 = new Scanner(new File("student.txt"));
int count = 0;
while (in1.hasNext()) {
    in1.nextLine();
    count++;
}

```

//สร้างตัวอ่านชื่อ in2 ...

```
String id[] = new String[count];
Scanner in2 = new Scanner(new File("student.txt"));
int i = 0;
while (in2.hasNext()) {
    id[i] = in2.nextLine();
    i++;
}
```

//สร้างตัวเขียนชื่อ out1 ...

```
PrintStream out1 = new PrintStream(new File("student.txt"));
for (i = 0; i < id.length; i++) {
    out1.print(id[i] + "\t");
    out1.print((int)(Math.random() * 6) + "\t");
    out1.print((int)(Math.random() * 11) + "\t");
    out1.print((int)(Math.random() * 11) + "\t");
    out1.print((int)(Math.random() * 31) + "\t");
    out1.print((int)(Math.random() * 46) + "\n");
}
```

//สร้างตัวอ่านชื่อ in3 ...

```
Scanner in3 = new Scanner(new File("student.txt"));
int sc[] = new int[count];
i = 0;
while (in3.hasNext()) {
    in3.next();
    for (int j = 1; j <= 5; j++) {
        sc[i] += in3.nextInt();
    }
    i++;
}
```

//สร้างตัวเขียนชื่อ out2 ...

```
PrintStream out2 = new PrintStream(new File("totalscore.txt"));
for (i = 0; i < id.length; i++) {
    out2.print(id[i] + "\t");
    out2.print(sc[i] + "\t");
    if (sc[i] >= 80) out2.print("A\n");
    if (sc[i] >= 70 && sc[i] < 80) out2.print("B\n");
    if (sc[i] >= 60 && sc[i] < 70) out2.print("C\n");
    if (sc[i] >= 50 && sc[i] < 60) out2.print("D\n");
    if (sc[i] < 50) out2.print("F\n");
}
```

//หาคะแนนรวม ...

```
int max = 0;
int min = 0;
double sum = 0.0;
int fq[] = new int[101];
for (i = 0; i < sc.length; i++) {
    if (sc[i] > sc[max]) max = i;
    if (sc[i] < sc[min]) min = i;
    sum += sc[i];
    fq[sc[i]]++;
}
int maxFq = 0;
for (i = 0; i < fq.length; i++) {
    if (fq[i] > fq[maxFq]) maxFq = i;
}
```

//แสดงผลลัพธ์ ...

```
out2.println("Max Score: " + sc[max]);
out2.println("Max Score Freq: " + fq[sc[max]]);
out2.println("Max Score Year: " +
    (54 - Integer.parseInt(id[max].substring(0, 2))));
out2.println("Min Score: " + sc[min]);
out2.println("Min Score Freq: " + fq[sc[min]]);
out2.println("Min Score Year: " +
    (54 - Integer.parseInt(id[min].substring(0, 2))));
out2.println("Avg Score: " + sum / count);
out2.println("Max Freq: " + fq[maxFq]);
out2.print("List Max Freq Score: ");
for (i = 0; i < fq.length; i++) {
    if (fq[i] == fq[maxFq]) out2.print(i + " ");
}
out2.println();
```

//คำสั่งในการปิดแฟ้มข้อมูล

```
in1.close();
in2.close();
in3.close();
out1.close();
out2.close();
```

```
} //End of main
} //End of class
```