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## Experiment 1

In [2]:
```
// Write down the code for Experiment 1 Step 2
int[][] score = new int[2][3];
score [0][0] = 75;
score [0][1] = 90;
score [0][2] = 88;
score [1][0] = 79;
score [1][1] = 82;
score [1][2] = 67;
System.out.println(score[0][0] + " " + score[0][1] + " " + score[0][2]);
System.out.println(score[1][0] + " " + score[1][1] + " " + score[1][2]);
```

```
75 90 88
79 82 67
```

## Question Experiment 1

1. Does the array elements have to be filled sequentially starting from index 0? Explain!

> Write down answer number 1 Not all programming languages use 0. However, 0 as the prefix of the index of an array is basically more logical than the number 1. This is because the computer's memory addressing mechanism points directly to the data, so the data at the next index is more simply calculated by the compiler.

2. Modify Experiment 1 Step 3 to display all array elements **score** using *for* loop

In [3]:
```
// Write down answer number 2
int[][] score = new int[2][3];
score [0][0] = 75;
score [0][1] = 90;
score [0][2] = 88;
score [1][0] = 79;
score [1][1] = 82;
score [1][2] = 67;

for (int i = 0; i < score.length; i++){
    for (int j = 0; j < score[0].length; j++){
    System.out.println(score[i][j] + " ");
 }
}
```

```
75
90
88
79
82
67
```

## Experiment 2

In [18]:
```java
// Write the code for Experiment 2 Step 3
import java.util.Scanner;
Scanner sc07 = new Scanner(System.in);
int[][] rating = new int[4][2];
for (int i = 0; i < rating.length; i++){
    for (int j = 0; j < rating[0].length; j++){
    System.out.print("Enter rating from user number " + i + " for restaurant " + j + " : ");
    rating[i][j] = sc07.nextInt();
 }
    System.out.println("");
}
```

```
Enter rating from user number 0 for restaurant 0 : 80
Enter rating from user number 0 for restaurant 1 : 70

Enter rating from user number 1 for restaurant 0 : 50
Enter rating from user number 1 for restaurant 1 : 60

Enter rating from user number 2 for restaurant 0 : 90
Enter rating from user number 2 for restaurant 1 : 85

Enter rating from user number 3 for restaurant 0 : 75
Enter rating from user number 3 for restaurant 1 : 80
```

In [19]:
```java
// Write the code for Experiment 2 Step 4
for(int[] rtg : rating){
    for(int r : rtg){
        System.out.print(r + " ");
    }
    System.out.println("");
}
```

```
80 70
50 60
90 85
75 80
```

## Question Experiment 2

1. In Experiment 2 Step 3, can position i be exchanged for position j? Explain why!

> Write down answer number 1 It is possible if only the variables are exchanged, but if the loop is exchanged it will cause an error. because loop i is done for looping rows and loop j is done for looping columns

In [9]:
```
// Write down answer number 2
import java.util.Scanner;
Scanner sc = new Scanner(System.in);
int x, y;
System.out.print("Enter user : ");
x = sc.nextInt();
System.out.print("Enter restaurant : ");
y = sc.nextInt();
System.out.println("");
int[][] rating07 = new int[x][y];
for (int i = 0; i < rating.length; i++){
 for (int j = 0; j < rating[0].length; j++){
 System.out.print("Enter rating from user number " + i + " for restaurant " + j + " : ");
 rating[i][j] = sc.nextInt();
 }
 System.out.println("");
}
```

```
Enter user : 3
Enter restaurant : 3

Enter rating from user number 0 for restaurant 0 : 80
Enter rating from user number 0 for restaurant 1 : 90

Enter rating from user number 1 for restaurant 0 : 85
Enter rating from user number 1 for restaurant 1 : 70

Enter rating from user number 2 for restaurant 0 : 95
Enter rating from user number 2 for restaurant 1 : 90

Enter rating from user number 3 for restaurant 0 : 75
Enter rating from user number 3 for restaurant 1 : 80
```

# Experiment 3

In [14]:
```java
// Write the programe code for experiment 3, Step 3
import java.util.Scanner;
Scanner sc = new Scanner(System.in);
int[][] price = new int [3][6];
double total, average;
for (int i = 0; i < price.length; i++){
 total = 0;
 average = 0;
 for (int j = 0; j < price[0].length; j++){
 System.out.printf("Enter the price [%d][%d] : ", i, j);
 price[i][j] = sc.nextInt();
 total += price[i][j];
 }
 average = total / price[0].length;
 System.out.printf("The average price of materials number-%d is %.2f\n", i, average);
}
```

```
Enter the price [0][0] : 8000
Enter the price [0][1] : 10000
Enter the price [0][2] : 5000
Enter the price [0][3] : 7500
Enter the price [0][4] : 15000
Enter the price [0][5] : 12000
The average price of materials number-0 is 9583.33
Enter the price [1][0] : 7000
Enter the price [1][1] : 8000
Enter the price [1][2] : 2000
Enter the price [1][3] : 3000
Enter the price [1][4] : 4000
Enter the price [1][5] : 6000
The average price of materials number-1 is 5000.00
Enter the price [2][0] : 8000
Enter the price [2][1] : 9000
Enter the price [2][2] : 11000
Enter the price [2][3] : 8500
Enter the price [2][4] : 9500
Enter the price [2][5] : 6000
The average price of materials number-2 is 8666.67
```

# Question Experiment 3

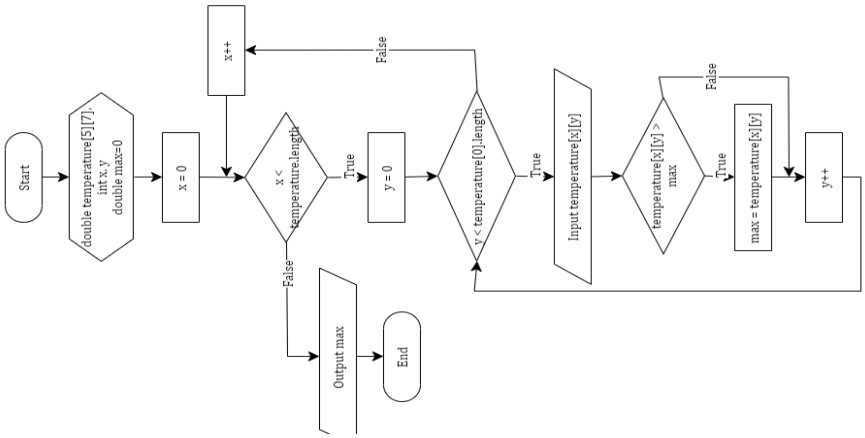
1. Explain the function of **average = total / price[0].length**!

> Write down answer number 1 Serves to calculate the average of the total total price

2. Why are the initialization variables **total = 0** and **average = 0** in the first *for* loop? What do you think happens if the initialization of the two variables is placed outside the *for* loop (after the array declaration)?

> Write down answer number 2 If these two variables are placed outside the for (after the array declaration) then the final output will be 0, because the variable is reset to the last variable according to your initialization.

Task




In [1]:
```
// Write down answer number 1
import java.util.Scanner;
Scanner sc = new Scanner(System.in);
double[][] temperature = new double[5][7];
for (int x = 0; x < temperature.length; x++){
    double max = 0;
     for (int y = 0; y < temperature[0].length; y++){
     System.out.print("Enter the temperature of city " + (x+1) + " for day " + (y+1) + " : ");
     temperature[x][y] = sc.nextInt();
         if (temperature[x][y] > max){
         max = temperature[x][y];
        }
     }
     System.out.println("Highest temperature recorded from this city for 7 days in a row " + max);
     System.out.println(" ");
}
```

```
Enter the temperature of city 1 for day 1 : 35
Enter the temperature of city 1 for day 2 : 30
Enter the temperature of city 1 for day 3 : 29
Enter the temperature of city 1 for day 4 : 27
Enter the temperature of city 1 for day 5 : 25
Enter the temperature of city 1 for day 6 : 26
Enter the temperature of city 1 for day 7 : 28
Highest temperature recorded from this city for 7 days in a row 35.0

Enter the temperature of city 2 for day 1 : 28
Enter the temperature of city 2 for day 2 : 27
Enter the temperature of city 2 for day 3 : 30
Enter the temperature of city 2 for day 4 : 33
Enter the temperature of city 2 for day 5 : 34
Enter the temperature of city 2 for day 6 : 32
Enter the temperature of city 2 for day 7 : 24
Highest temperature recorded from this city for 7 days in a row 34.0



Enter the temperature of city 3 for day 1 : 34
Enter the temperature of city 3 for day 2 : 32
Enter the temperature of city 3 for day 3 : 30
Enter the temperature of city 3 for day 4 : 26
Enter the temperature of city 3 for day 5 : 24
Enter the temperature of city 3 for day 6 : 22
Enter the temperature of city 3 for day 7 : 21
Highest temperature recorded from this city for 7 days in a row 34.0

Enter the temperature of city 4 for day 1 : 36
Enter the temperature of city 4 for day 2 : 27
Enter the temperature of city 4 for day 3 : 28
Enter the temperature of city 4 for day 4 : 29
Enter the temperature of city 4 for day 5 : 30
Enter the temperature of city 4 for day 6 : 24
Enter the temperature of city 4 for day 7 : 31
Highest temperature recorded from this city for 7 days in a row 36.0

Enter the temperature of city 5 for day 1 : 28
Enter the temperature of city 5 for day 2 : 27
Enter the temperature of city 5 for day 3 : 29
Enter the temperature of city 5 for day 4 : 24
Enter the temperature of city 5 for day 5 : 23
Enter the temperature of city 5 for day 6 : 22
Enter the temperature of city 5 for day 7 : 26
Highest temperature recorded from this city for 7 days in a row 29.0
```

## 2. There are data recording results for five students containing information on age, weight (kg), and height (cm). The data is stored in a two-dimensional array.

| Name | Age | Weight | Height |
|---|---|---|---|
| Desi | 19 | 51 | 155 |
| Rofan | 18 | 55 | 163 |
| Lala | 18 | 45 | 153 |
| Beky | 20 | 46 | 158 |
| Ega | 19 | 58 | 160 |

*Note: value storage can be done through initialization using the assignment operator*

- Show *lowest weight* among the five students
- Show *average height* of the five students
- Show the name of the student with *oldest age* among the five students

In [2]:
```
// Write down answer number 2
int[][] data = {
 {19, 51, 155}, {18, 55, 163}, {18, 45, 153},
 {20, 46, 158}, {19, 58, 160}
 };
String[] name = { "Desi", "Rofan", "Lala", "Beky", "Ega" };
String student;
double max = 0;
double average = 0;
double min = 100;
double total = 0;
for (int x = 0; x < data.length; x++){
 for (int y = 0; y < data[0].length; y++){
 if (y == 2){
 total += data[x][y];
 }
 }
 for (int y = 0; y < data[0].length; y++){
 if (data[x][0] > max){
 max = data[x][y];
 student = name[x];
 }
 }
 for (int y = 1; y < data[0].length; y++){
 if (data[x][1] < min){
 min = data[x][y];
 }
 }
}
average = total / data.length;
System.out.println("The lowest weight among the five students : " + min);
System.out.println("The average weight and height of the five students : " + average);
System.out.println("The name of the student with the oldest age among the five students : " + student + " with age " + max + " ye
```

```
The lowest weight among the five students : 45.0
The average weight and height of the five students : 157.8
The name of the student with the oldest age among the five students : Beky with age 20.0 years old
```

Code task 1 :

```
import java.util.Scanner;
Scanner sc = new Scanner(System.in);
double[][] temperature = new double[5][7];
for (int x = 0; x < temperature.length; x++){
   double max = 0;
    for (int y = 0; y < temperature[0].length; y++){
    System.out.print("Enter the temperature of city " + (x+1) + " for day " + (y+1) + " : ");
    temperature[x][y] = sc.nextInt();
        if (temperature[x][y] > max){
        max = temperature[x][y];
       }
    }
    System.out.println("Highest temperature recorded from this city for 7 days in a row " + max);
    System.out.println(" ");
}
```

Code Task 2 :

```
int[][] data = {{19, 51, 155}, {18, 55, 163}, {18, 45, 153}, {20, 46, 158}, {19, 58, 160}};
String[] name = { "Desi", "Rofan", "Lala", "Beky", "Ega" };
String student;
double max = 0;
double average = 0;
double min = 100;
double total = 0;
for (int x = 0; x < data.length; x++){
    for (int y = 0; y < data[0].length; y++){
    if (y == 2){
    total += data[x][y];
    }
    }
    for (int y = 0; y < data[0].length; y++){
        if (data[x][0] > max){
        max= data[x][y];
        student = name[x];
        }
    }
    for (int y = 1; y < data[0].length; y++){
        if (data[x][1] < min){
        min = data[x][y];
        }
        }
}
```

```
average = total / data.length;
System.out.println(" The lowest weight among five student : " + min);
System.out.println(" The average weight and height of the five student : " + average);
System.out.println(" The name of the student with the oldest age among the five students : " +
student + " with age " + max + " years old ")
```