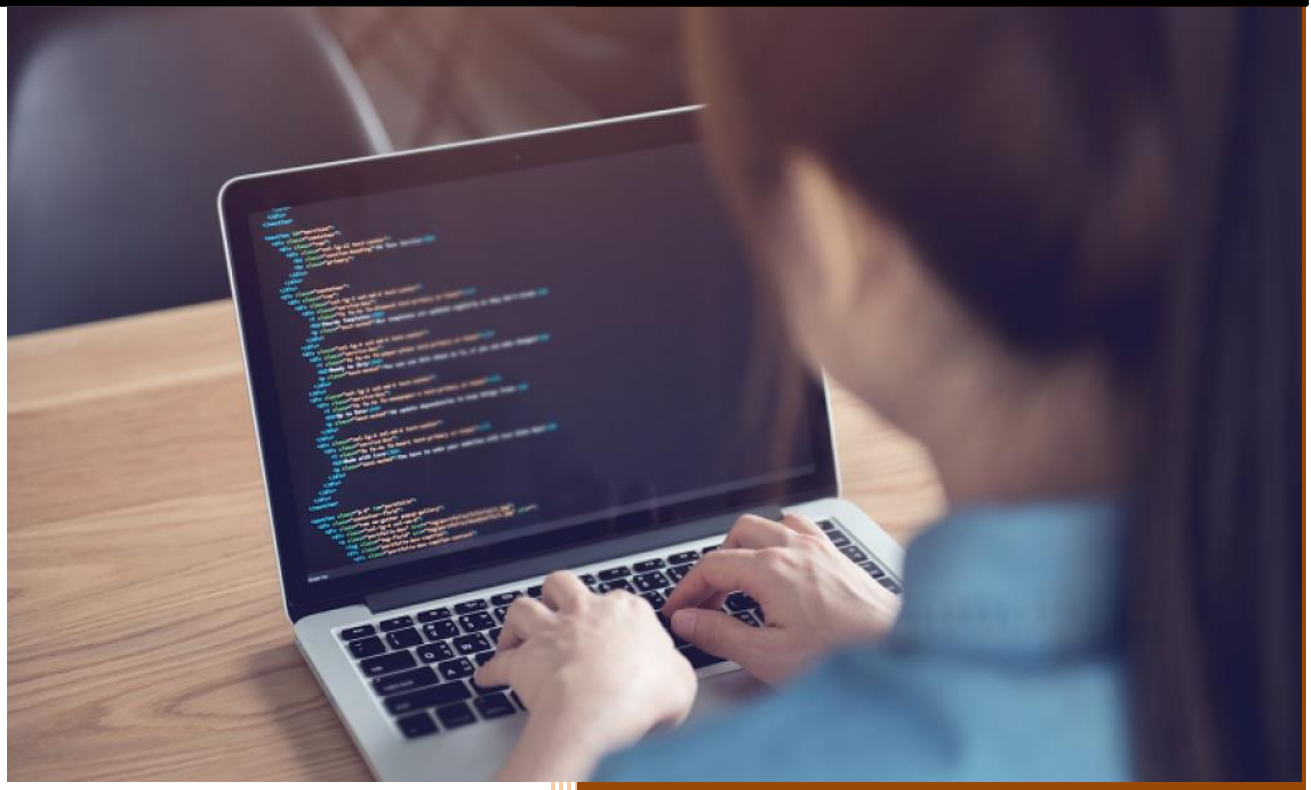
Build Your IT Skill

# ១). Introduction Java Programming

# ២) Control Statements

# ៣) Loop Statement

# ៤) Function




រៀបរៀងដោយៈ

សាស្ត្រាចារ្យ: **គ្រូអាយធីចិត្តល្អ**

អនុបណ្ឌិតពត៌មានវិទ្យា និង

គ្រប់គ្រង់ (MBA)

# ណែនាំអោយស្គាល់ Java Programming

## I. ដូចម្តេចទៅដែលហៅ ថា Java Programming?

Java Programming គឺជាប្រភេទភាសារសរសេរកូដ ដែលបង្កើតឡើងដោយក្រុមហ៊ុន Sun Microsystems (ឥឡូវជារបស់ក្រុមហ៊ុន Oracle Corporation) ស្ថាបនិត លោក James Gosling ដែលដាក់ដំណើរការជាលើកដំបូងក្នុងថ្ងៃទី May 23, 1995។

James Gosling, the creator of Java (2008)

Java មានល្បឿនលឿនអាចទុកចិត្តបាននិងមានសុវត្ថិភាព។ យោងតាមក្រុមហ៊ុន Oracle ក្រុមហ៊ុនដែលគ្រប់គ្រង Java ដែល Java មានចំនួន 3 billion គ្រឿងទូទាំងពិភពលោក។

លក្ខណៈសំខាន់ៗរបស់ Java Programming ៖

1. Java គឺជាប្រភេទ platform independent ដែលមានលក្ខណៈ ជា" write once, run anywhere" (WORA)
2. An object-oriented Language: Java មានលក្ខណៈជាទំរង់ OO ដែលការបង្កើតឬប្រើប្រាស់ត្រូវប្រើប្រាស់ Class/Object។
3. Java is fast: វាប្រើប្រាស់នូវ JVMs(Java Virtual Machine)ដែល ថ្មី និងមាន លឿនជាងមុន ហើយCPUដែលប្រតិបត្តិ JVM ក៏ដំណើរការយ៉ាងល្អ។

4. Java is secure: Java ផ្តល់ជូននូវមុខងារជាច្រើនសម្រាប់សុវត្ថិភាពកម្មវិធី Java ។ លក្ខណៈពិសេស របស់ Java Programming:

   - ផ្តល់នូវ secure platform សំរាប់ការ developing និង running applications
   - វាអាចគ្រប់គ្រង់នូវ memory ជាលក្ខណៈស្វ័យប្រវត្តពេលដែរវា មានបញ្ហាកើតឡើង
   - វាបានផ្តល់ជូននូវ secure communication ដោយ កាពារ ភាពត្រឹមត្រូវនៃទិន្នន័យ និង ការបញ្ជូនទិន្នន័យ។

5. Large Standard Library: Java environment មាននូវ classes និង methods រាប់ពាន់ ដែលស្ថិតនៅក្នុង packages ផ្សេងៗ សំរាប់ជួយ software developers ដូចជា៖

   java.lang - for advanced features of strings, arrays etc.

   java.util - for data structures, regular expressions, date and time functions etc.

   java.io - for file i/o, exception handling etc.


ខាក្រោមគឺជាប្រភេទនៃ Java Terminologies ដែលអ្នកគួរដឹងពេលចាប់ផ្តើមជាមួយនិង Java Programming ៖

- **Java Platform, Enterprise Edition (Java EE)** :សម្រាប់បង្កើតនូវ applications ដែលដំណើរការ លើ Server servers. ឧទាហរណ៏ ៖e-commerce, accounting, banking information systems -ល-។
- **Java Platform, Micro Edition (Java ME)** ប្រើប្រាស់សំរាប់ ជាមួយនិង Small Device ដូចជា Smart Phone, Tablet,…

- Java Platform, Standard Edition (Java SE) ប្រើប្រាស់សំរាប់ជា basic Java environment សំរាប់បង្កើតនូវ standard programs.
- JRE - JRE (Java Runtime Environment) ដូចជា JVM, supporting libraries, និង components ជាច្រើនដែលដែល run Java program.
- DK - JDK (Java Development Kit) ដូចជា JRE និង tools such as compilers និង debuggers សំរាប់ developing Java applications.

**Install Java៖**

**-JDK**

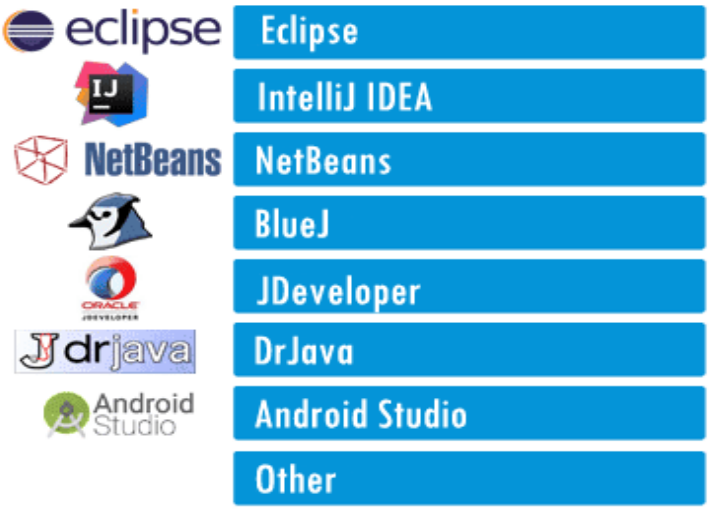
**Java SE Development Kit 8u131**

You must accept the Oracle Binary Code License Agreement for Java SE to download this software.

Accept License Agreement  Decline License Agreement

| Product / File Description | File Size | Download |
|---|---|---|
| Linux ARM 32 Hard Float ABI | 77.87 MB | jdk-8u131-linux-arm32-vfp-hflt.tar.gz |
| Linux ARM 64 Hard Float ABI | 74.81 MB | jdk-8u131-linux-arm64-vfp-hflt.tar.gz |
| Linux x86 | 164.66 MB | jdk-8u131-linux-i586.rpm |
| Linux x86 | 179.39 MB | jdk-8u131-linux-i586.tar.gz |
| Linux x64 | 162.11 MB | jdk-8u131-linux-x64.rpm |
| Linux x64 | 176.95 MB | jdk-8u131-linux-x64.tar.gz |
| Mac OS X | 226.57 MB | jdk-8u131-macosx-x64.dmg |
| Solaris SPARC 64-bit | 139.79 MB | jdk-8u131-solaris-sparcv9.tar.Z |
| Solaris SPARC 64-bit | 99.13 MB | jdk-8u131-solaris-sparcv9.tar.gz |
| Solaris x64 | 140.51 MB | jdk-8u131-solaris-x64.tar.Z |
| Solaris x64 | 96.96 MB | jdk-8u131-solaris-x64.tar.gz |
| Windows x86 | 191.22 MB | jdk-8u131-windows-i586.exe |
| Windows x64 | 198.03 MB | jdk-8u131-windows-x64.exe |

- IDE ដូចជា៖ NetBeans, Eclipse, IntelliJ IDEA Community Edition, Android Studio Enide Studio 2014, BlueJ, jEdit, jGRASP, Jsource, Jdeveloper, DrJava ។



```
1   Syntax:
2
3   import Package;
4   class HelloWorldApp {
5       public static void main(String[] args) {
6
7           Block Code Java
8
9
10      }
11  }
12
```

## ឧទាហរណ៍ ១

```
// Your First Program

class Demo {
    public static void main(String[] args) {
        System.out.println("Hello ETEC CENTER");
        System.out.println("Hi, First Program");
    }
}
```

*លទ្ធផលទទួលបាន៖*

```
General Output
--------------------Configuration: <Defau
Hello ETEC CENTER
Hi, First Program

Process completed.
```

## ឧទាហរណ៍ ២៖

```java
// Your First Program

class Demo {
    public static void main(String[] args) {

        double number1 = 12.5, number2 = 3.5, result;

        // Using addition operator
        result = number1 + number2;
        System.out.println("number1 + number2 = " + result);

        // Using subtraction operator
        result = number1 - number2;
        System.out.println("number1 - number2 = " + result);

        // Using multiplication operator
        result = number1 * number2;
        System.out.println("number1 * number2 = " + result);

        // Using division operator
        result = number1 / number2;
        System.out.println("number1 / number2 = " + result);

        // Using remainder operator
        result = number1 % number2;
        System.out.println("number1 % number2 = " + result);
    }
}
```

## ការបង្ហាញទិន្នន័យលើ Monitor របស់ Java Programming ៖

- Java Console Application: *គឺជាការបង្ហាញទិន្នន័យជាលក្ខណៈ* Console Application *ពោលគឺលក្ខណៈជា* Console Line។

**ឧទាហរណ៍ ១៖**

```
class Demo {
    public static void main(String[] args) {

        String start, middle, end, result;

        start = "Talk is cheap. ";
        middle = "Show me the code. ";
        end = "- Linus Torvalds";

        result = start + middle + end;
        System.out.println(result);
    }
}
```

**ឧទាហរណ៍ ២៖**

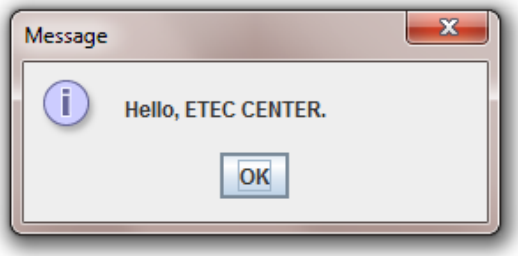
```
class Demo {
    public static void main(String[] args) {

    System.out.println("1. println ");
        System.out.println("2. println ");

        System.out.print("1. print ");
        System.out.print("2. print");
    }
}
```

- Java Dialog Application: *គឺជាការបង្ហាញទិន្នន័យជាលក្ខណៈ* Dialog Box*ពោល គឺលក្ខណៈជា* Message Show*។*

**ឧទាហរណ៍ ១៖**

```
// Your First Program
import javax.swing.*;
class Demo {
    public static void main(String[] args) {
    JOptionPane.showMessageDialog(null,"Hello, ETEC CENTER.");
    }
}
```

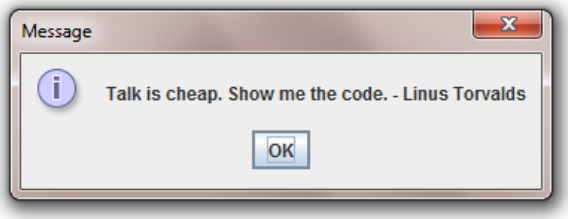
**លទ្ធផលទទួលបាន**




**ឧទាហរណ៍ ២៖**

```
import javax.swing.*;
class Demo {
    public static void main(String[] args) {
    String start, middle, end, result;

        start = "Talk is cheap. ";
        middle = "Show me the code. ";
        end = "- Linus Torvalds";

        result = start + middle + end;
    JOptionPane.showMessageDialog(null,result);
    }
}
```

**លទ្ធផលទទួលបាន**



## ការបញ្ចូលទិន្នន័យពី Keyboard របស់ Java Programming ៖

- Java Console Application: *គឺជាការបញ្ចូលទិន្នន័យជាលក្ខណៈ* Console Application *ពោលគឺលក្ខណៈជា* Console Line*។*

### ឧទាហរណ៏ ១៖

```
// Your First Program
import java.util.*;
class Demo {
    public static void main(String[] args) {
    Scanner input = new Scanner(System.in);

        System.out.print("Enter an integer: ");
        int number1 = input.nextInt();
        System.out.print("Enter an integer: ");
        int number2 = input.nextInt();
        System.out.println("You entered " + number1);
        System.out.println("You entered " + number2);
        System.out.println("You entered " + (number2+number1));
}
}
```

### លទ្ធផលទទួលបាន៖

```
Enter an integer: 12
Enter an integer: 36
You entered 12
You entered 36
You entered 48
5
Process completed.
```

| Method | Description |
|---|---|
| public String next() | it returns the next token from the scanner. |
| public String nextLine() | it moves the scanner position to the next line and returns the value as a string. |
| public byte nextByte() | it scans the next token as a byte. |
| public short nextShort() | it scans the next token as a short value. |
| public int nextInt() | it scans the next token as an int value. |
| public long nextLong() | it scans the next token as a long value. |
| public float nextFloat() | it scans the next token as a float value. |
| public double nextDouble() | it scans the next token as a double value. |

## ឧទាហរណ៍ ២៖

```
1   import java.util.*;
2   class Test{
3       public static void main(String args[])
4       {   int id;
5           String name,sex;
6           Sacanner objin=new Scanner(System.in);
7           System.out.print("Input ID");
8           id=objin.nextInt();
9           System.out.print("Input Name");
10          id=objin.next();
11          System.out.print("Input Gender");
12          id=objin.next();
13          System.out.print("ID=" + id + "\n");
14          System.out.print("Name=" + name + "\n");
15          System.out.print("Sex=" + sex + "\n");
16
17       }
18
19  }
20
21  Save: Test.java
```

## ឧទាហរណ៍ ៣៖

```
1   import java.util.Scanner;
2   class ScannerTest{
3    public static void main(String args[]){
4      Scanner sc=new Scanner(System.in);
5      System.out.println("Enter your rollno");
6      int rollno=sc.nextInt();
7      System.out.println("Enter your name");
8      String name=sc.next();
9      System.out.println("Enter your fee");
10     double fee=sc.nextDouble();
11     System.out.println("Rollno:"+rollno+" name:"+name+" fee:"+fee);
12     sc.close();
13   }
14  }
```

- Java Dialog Application: *គឺជាការបញ្ចូលទិន្នន័យជាលក្ខណៈ* Dialog Box*ពេល គឺលក្ខណៈជា* Message Show*។*

```
// Your First Program
import javax.swing.*;
class Demo {
    public static void main(String[] args) {
      JFrame frame = new JFrame("InputDialog Example #1");
     int x;
     int y;
     int sum;
     x=Integer.parseInt(JOptionPane.showInputDialog(frame,"Input X="));
     y=Integer.parseInt(JOptionPane.showInputDialog(frame,"Input Y="));
     sum=x+y;
    JOptionPane.showMessageDialog(null, "Sum is=" + sum,
       "Sum of two Integers", JOptionPane.PLAIN_MESSAGE);

}
}
```

## លំហាត់អនុវត្តន៍

*១)ចូរសរសេរកូដអោយគេអាចបញ្ចូលពត៌មានដូចជា៖* id(String), name(String), sex(String) *និង* Address(String) *បន្ទាប់បង្ហាញពត៌មានទាំងនោះចេញមកក្រៅវិញ?*

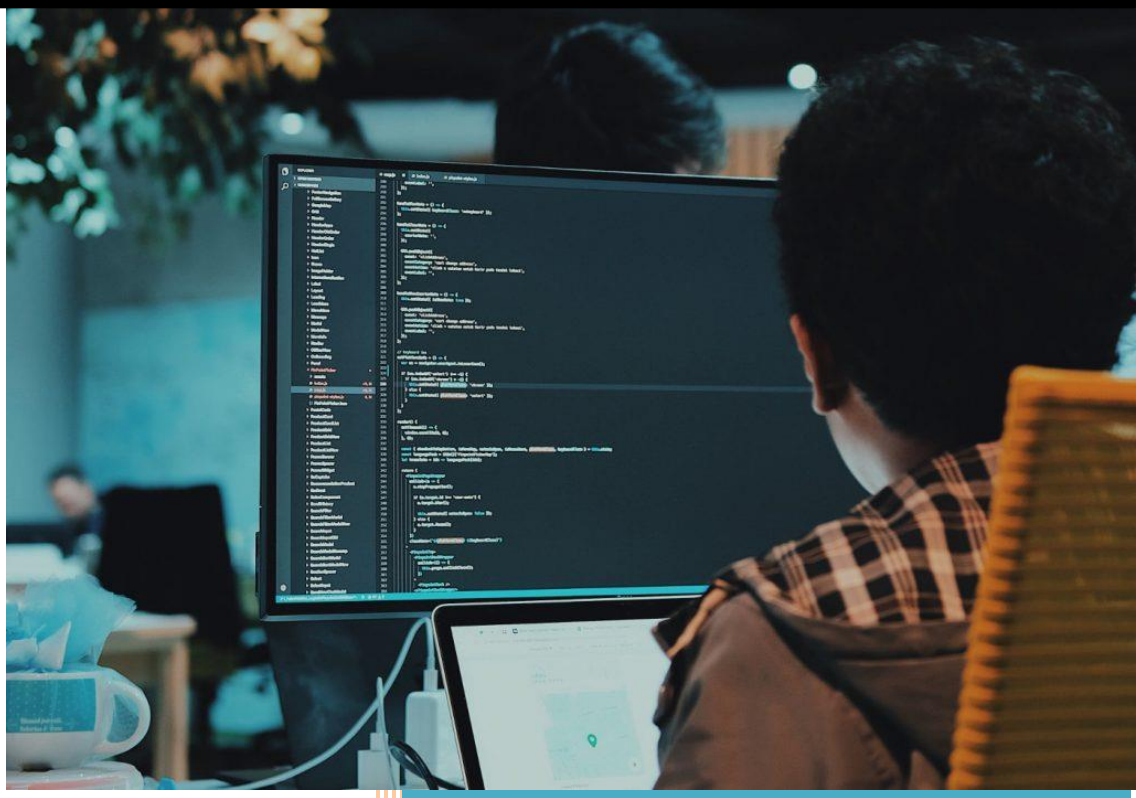
*២) ចូរសរសេរកូដបញ្ចូលពត៌មានដូចជា៖* Code(int), Name(String), qty(int), price(float) *បន្ទាប់មក គណនារកតំលៃ* totald(float) *និង* totalr(float) *បន្ទាប់បង្ហាញពត៌មានទាំងនោះចេញមកក្រៅវិញ?*

*៣) ចូរសរសេរកូដបញ្ចូលពត៌មានដូចជា៖* score1(float), score2(float), score3(float), score4(float), score5(float)*បន្ទាប់មក គណនារកតំលៃ* total(float) *និង* average(float) *បន្ទាប់បង្ហាញពត៌មាន ទាំងនោះចេញមកក្រៅវិញ?*

Build Your IT Skill

# ណែនាំអោយស្គាល់ពី លក្ខណ្ឌអបរ Java

## Condition Java or Control Statement




រៀបរៀងដោយៈ

សាស្ត្រាចារ្យ: គ្រូអោយធីចិត្តល្អ

អនុបណ្ឌិតពត៌មានវិទ្យា និង

គ្រប់គ្រង់ (MBA)

# ណែនាំអោយស្គាល់ការកំណត់លក្ខ័ណ្ឌ Java
# Control Statement of Java

## I. ដូចម្តេចទៅដែលហៅថាការកំណត់លក្ខណ្ឌ?

Control Statement *គឺជាការកំណត់នូវលក្ខណ្ឌដើម្បីអោយ* Statement *ណាមួយអនុវត្តន៍តាមការ កំណត់របស់យើង។ លក្ខណ្ឌក្នុង* Java *ត្រូវបានគេកំណត់ជា ៣ប្រភេទ ដូចជា៖*

*១*). If statement

*២*). If else Statement

*៣*). If else if…. else Statement

1.1. if Statement: *គឺជាប្រភេទ លក្ខណ្ឌដែលអាចត្រួតពិនិត្យបានតែមួយ លក្ខណ្ឌគត់ពោលគឺបង្ហាញលទ្ធផលបានតែករណីពិត*(True) *តែប៉ុណ្ណោះ។*

*ឧទាហរណ៍* 1 :

```
public class DemoCondition {
    public static void main (String[] args) {
      int x,y;
      x=100;
      y=40;
      if(x>y)
         System.out.println ("X is Maximum...!");
    }
}
```

*លទ្ធផលទទួលបាន៖*

```
General Output
--------------------Configuration: <Default
X is Maximum...!

Process completed.
```

ឧទាហរណ៍ ២ :

```
import java.util.*;
public class DemoCondition {
    public static void main (String[] args) {
        String uname,pass,cpass;
        uname="Sa";
        pass="123";
        cpass="123";
        if(uname.equals("Sa"))
          if(pass.equals("123"))
             if(cpass.equals("123"))
                  System.out.println ("Welcome to User Login...!");
    }
}
```

```
General Output
--------------------Configuration: <Default>-------
Welcome to User Login...!

Process completed.
```

លទ្ធផលទទួលបាន៖

1.2. if else Statement: គឺជាប្រភេទ លក្ខណៈដែលអាចត្រួតពិនិត្យបានពីរករណីគឺ ពិត(True) ឬ មិនពិត(False)។ លក្ខណៈប្រភេទនេះវាអាចបោះចំលើយបានពិត ឬ មិនពិតអាស្រ័យលើលក្ខណៈ នៃការកំណត់។

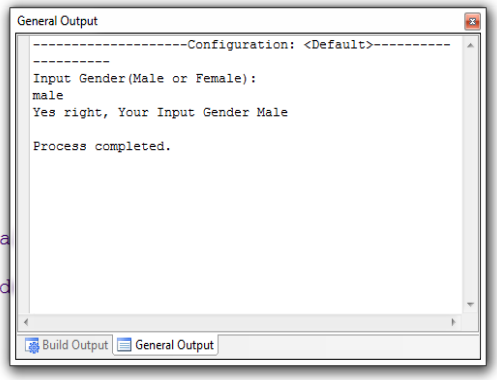
ឧទាហរណ៍ ១

```
import java.util.*;
public class TestControl {
 public static void main (String[] args) {
      Scanner objin=new Scanner(System.in);
      int x,y;
      System.out.println ("input X=");
      x=objin.nextInt();
      System.out.println ("input Y=");
      y=objin.nextInt();
      if(x>y)
           System.out.println ("X is greater than Y!");
      else
           System.out.println ("Y is greater Than X!");

 }
}
```

```
General Output
--------------------Configuration: <Default>----------
----------
input X=
10
input Y=
23
Y is greater Than X!

Process completed.
```

ឧទាហរណ៍ ២

```
8
9  import java.util.*;
10 public class TestControl {
11  public static void main (String[] args) {
12        Scanner objin=new Scanner(System.in);
13        String sex;
14        System.out.println ("Input Gender(Male or Female):");
15        sex=objin.next();
16
17       if(sex.equalsIgnoreCase("Male"))
18            System.out.println ("Yes right, Your Input Gender Ma
19       else
20            System.out.println ("No right, Your Input Other Gend
21
22  }
23 }
```




ឧទាហរណ៍ ៣

```
import java.util.*;
public class DemoCondition {
    public static void main (String[] args) {
        String uname,pass,cpass;
        uname="Sa";
        pass="1234";
        cpass="123";
        if(uname.equals("Sa"))
          if(pass.equals("123"))
             if(cpass.equals("123"))
                  System.out.println ("Welcome to User Login...!");
             else
                 System.out.println ("Invalid Confirm Password!");
          else
             System.out.println ("Invalid Password!");
       else
         System.out.println ("Invalid User Name!");
    }
}
```

លទ្ធផលទទួលបាន៖

```
General Output
----------Configuration: <Default
Invalid Password!

Process completed.
```

1.3. if else if Statement: *គឺជាប្រភេទលក្ខណ្ឌមួយបែបទៀតដែលគេអាចកំណត់នូវលក្ខណ្ឌបាន ច្រើនករណីៗ*

*ឧទាហរណ៍ ១: ចូរសរសេរកូដដែលអាចអោយគេរកការបញ្ចុះតំលៃ ទៅតាមតំលៃសរុប(Total) នៃការទិញរបស់អតិថិជន)?*

```
10 public class DemoControl {
11   public static void main (String[] args) {
12      int code;
13      String name;
14      int qty;
15      DecimalFormat df = new DecimalFormat("####0.00");
16      double price,total,dis,pay;
17      Scanner objin=new Scanner(System.in);
18      System.out.print("Input Code=");
19      code=objin.nextInt();
20      System.out.print("Input Name=");
21      name=objin.next();
22      System.out.print("Input Quantity=");
23      qty=objin.nextInt();
24      System.out.print("Input Price=");
25      price=objin.nextFloat();
26      total=qty*price;
27      if(total>=1 && total<10)
28          dis=total*0.1;
29      else if(total>=10 && total<20)
30         dis=total*0.2;
31      else if(total>=10 && total<20)
32         dis=total*0.2;
33       else if(total>=20 && total<30)
34         dis=total*0.3;
35       else if(total>=30 && total<40)
36         dis=total*0.4;
37       else if(total>=40 && total<50)
38         dis=total*0.5;
39       else
40         dis=total*0.6;
41      pay=total-dis;
42      System.out.println ("Total =$" + df.format(total));
43      System.out.println ("Discount=$" + df.format(dis));
44      System.out.println ("payment=$" + df.format(pay));
45   }
46 }
```

| Total | Discount |
|---|---|
| 1-10 | 10% |
| 10-20 | 20% |
| 20-30 | 30% |
| 30-40 | 40% |
| 40-50 | 50% |
| 50- | 60 |

# លំហាត់អនុវត្តន៍

១) ចូរសរសេរកូដសម្រាប់អោយគេអាចរក និទេស(Grade), ពិន្ទុសរុប(Total) និង មធ្យមភាគ តាមលក្ខណ្ឌដូចខាងក្រោម៖

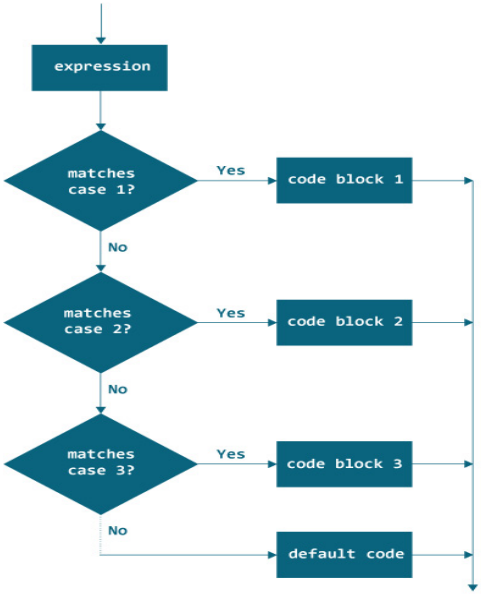
| Total Score | Grade |
|---|---|
| 90-100 | "A" |
| 80-90 | "B" |
| 70-80 | "C" |
| 60-70 | "D" |
| 50-60 | "E" |
| 0-50 | "F" |

១) ចូរសរសេរកូដសម្រាប់អោយគេអាចរក ចំនួនសរុបប្រើប្រាស់ក្នើង(Total) និងតំលៃសរុប (Payment) តាមលក្ខណ្ឌដូចខាងក្រោម៖

| Total Use | Payment(៛) |
|---|---|
| 1-10 | ៥០០៛ |
| 10-20 | ៥៥០៛ |
| 20-30 | ៦០០៛ |
| 30-40 | ៦៥០៛ |
| 40-50 | ៧០០៛ |
| 50-60 | ៧៥០៛ |
| 60- | ៨០០៛ |

**ទំរង់** Switch Case: *គឺជាទំរង់មួយបែបទៀតសំរាប់អោយគេអាចប្រើក្នុងការជ្រើសរើស!*

```
switch(expression) {
   case value :
      // Statements
      break; // optional

   case value :
      // Statements
      break; // optional

   // You can have any number of case statements.
   default : // Optional
      // Statements
}
```




## ឧទាហរណ៍ ១:

```
1  // Java program to Demonstrate Switch Case
2  // with Primitive(int) Data Type
3
4  // Class
5  public class GFG {
6
7      // Main driver method
8      public static void main(String[] args)
9      {
10         int day = 5;
11         String dayString;
12
13         // Switch statement with int data type
14         switch (day) {
15
16         // Case
17         case 1:
18             dayString = "Monday";
19             break;
20
21         // Case
22         case 2:
23             dayString = "Tuesday";
24             break;
25
26             // Case
27         case 3:
28             dayString = "Wednesday";
29             break;
30
```

```
31              // Case
32              case 4:
33                  dayString = "Thursday";
34                  break;
35
36              // Case
37              case 5:
38                  dayString = "Friday";
39                  break;
40
41              // Case
42              case 6:
43                  dayString = "Saturday";
44                  break;
45
46              // Case
47              case 7:
48                  dayString = "Sunday";
49                  break;
50
51              // Default case
52              default:
53                  dayString = "Invalid day";
54              }
55              System.out.println(dayString);
56          }
57      }
```

## ឧទាហរណ៍២

```
1  ublic class Test {
2
3      public static void main(String args[]) {
4         // char grade = args[0].charAt(0);
5         char grade = 'C';
6
7         switch(grade) {
8            case 'A' :
9               System.out.println("Excellent!");
10              break;
11           case 'B' :
12           case 'C' :
13              System.out.println("Well done");
14              break;
15           case 'D' :
16              System.out.println("You passed");
17           case 'F' :
18              System.out.println("Better try again");
19              break;
20           default :
21              System.out.println("Invalid grade");
22        }
23        System.out.println("Your grade is " + grade);
24     }
25  }
```

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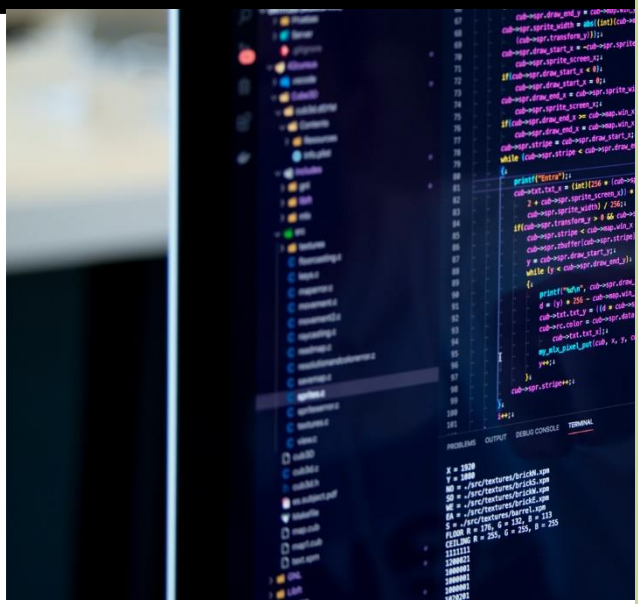
# ណែនាំស្គាល់ពី រឡ

## Introduction L



# ណែនាំអោយស្គាល់វង្វិលជុំ
## Loop of Java

## II. ដូចម្តេចទៅដែលហៅ ថា Loop?

Loop *សំដៅលើវង្វិលជុំដែលធ្វើការងារម្តងហើយ ម្តងទៀត រហូតដល់វា ជួបលក្ខណ្ឌ ណា មួយ ដែលពិតទើបវាបញ្ចប់។ ដើម្បីអាចអោយ* Loop *មួយវង្វិលជុំបានអាស្រ័យលើតំលៃ ៣ គឺ៖*

- Initialize *សំដៅលើការផ្តល់តំលៃដំបូងទៅអោយ* Loop(0, 1, 2, ….) ។
- Condition: *សំដៅលើការកំណត់តំលៃចុងក្រោយដើម្បី* Loop *បញ្ចប់*(i>=10, i<=10,….)។
- Step: *សំដៅលើជំហានរបស់* Loop *ដែលត្រូវដំណើរការដូចជា៖* i++, i-- , i=i+2,i=i+3, i=i-2, i=i-3,….។

## III. ប្រភេទនៃ Loop

**Loop របស់ java ត្រូវបានគេបែងចែកជា ៤ប្រភេទ ដូចជា៖**

3.1. For Loop: *គឺជាប្រភេទ* Loop *ដែលធ្វើការត្រូវតែត្រួតពិនិត្យនូវលក្ខណ្ឌ ជាមុនសិន។*

**ឧទាហរណ៍ ១៖**

```
1
2  import java.util.*;
3  public class LoopSt {
4   public static void main (String[] args) {
5     int i;
6     System.out.println ("For Loop Statement 1");
7     for(i=1;i<=10;i++)
8     {
9      System.out.print (i+ "    ");
10    }
11   System.out.println ("\nFor Loop Statement 2");
12    for(i=10;i>=1;i--)
13    {
14     System.out.print (i+ "    ");
15    }
16
17
18  }
```

## លទ្ធផលទទួលបាន៖

```
General Output
--------------------Configuration: <Default>--------------
For Loop Statement 1
1   2   3   4   5   6   7   8   9   10
For Loop Statement 2
10   9   8   7   6   5   4   3   2   1
Process completed.
```

## ឧទាហរណ៍ ២៖

Start Page | LoopSt.java *

```
1  import java.util.*;
2  public class LoopSt {
3   public static void main (String[] args) {
4      int n,op,i;
5      String st;
6      Scanner objin=new Scanner(System.in);
7     do{
8      System.out.println ("1. Loop1");
9      System.out.println ("2. Loop2");
10     System.out.println ("3. Loop3");
11     System.out.println ("4. Loop4");
12     System.out.println ("5. Loop5");
13     System.out.println ("6. Loop6");
14    System.out.println ("Choose One=");
15    op=objin.nextInt();
16    System.out.println ("Input Number of Loop=");
17    n=objin.nextInt();
18     switch(op)
19     { case 1:{
20           for(i=2;i<=n;i=i+2)
21           {
22             System.out.print(i + "   ");
23           }
24        }break;
25        case 2:{
26           for(i=2;i<=n;i=i+3)
27           {
28             System.out.print(i + "   ");
29           }
30        }break;
31        case 3:{
32           for(i=n;i>=n;i=i-2)
33           {
34             System.out.print(i + "   ");
35           }
36        }break;
```

```
37          case 4:{
38                for(i=n;i>=n;i=i-3)
39                {
40                  System.out.print(i + "   ");
41                }
42              }break;
43          case 5:{
44                for(i=n;i>=n;i=i-1)
45                {
46                  System.out.print(i + "   ");
47                }
48              }break;
49
50          }//End Switch
51          System.out.println ("\nPress Yes to Continue....");
52          st=objin.next();
53      }while(st.equals("yes"));
54      }
55  }
```

**លទ្ធផលទទួលបាន៖**

```
General Output
--------------------Configuration:
1. Loop1
2. Loop2
3. Loop3
4. Loop4
5. Loop5
6. Loop6
Choose One=
1
Input Number of Loop=
20
2   4   6   8   10   12   14   16   18   20

Process interrupted by user.
```

3.2. While Loop: *គឺជាប្រភេទ Loop ដែលធ្វើការត្រូវតែត្រួតពិនិត្យនូវលក្ខណ្ឌ ជាមុន សិន តែគ្រាន់តែទីតាំងនៃតំលៃ ទាំង ៣ត្រូវនៅផ្សេងៗគ្នាៗ*

**ឧទាហរណ៍ ១៖**

Start Page | LoopSt.java ×

```
1  import java.util.*;
2  public class LoopSt {
3   public static void main (String[] args) {
4     int i;
5     System.out.println ("Form Incremental Loop");
6     i=1; //Initialize
7     while(i<=10) //Condition
8     {
9       System.out.print(i + "    ");
10      i++; //Step
11    }
12    System.out.println ("\nForm Decremental Loop");
13     i=10; //Initialize
14    while(i>=1) //Condition
15    {
16      System.out.print(i + "    ");
17      i--; //Step
18    }
19
20
21  }
22 }
```

**លទ្ធផលទទួលបាន៖**

General Output

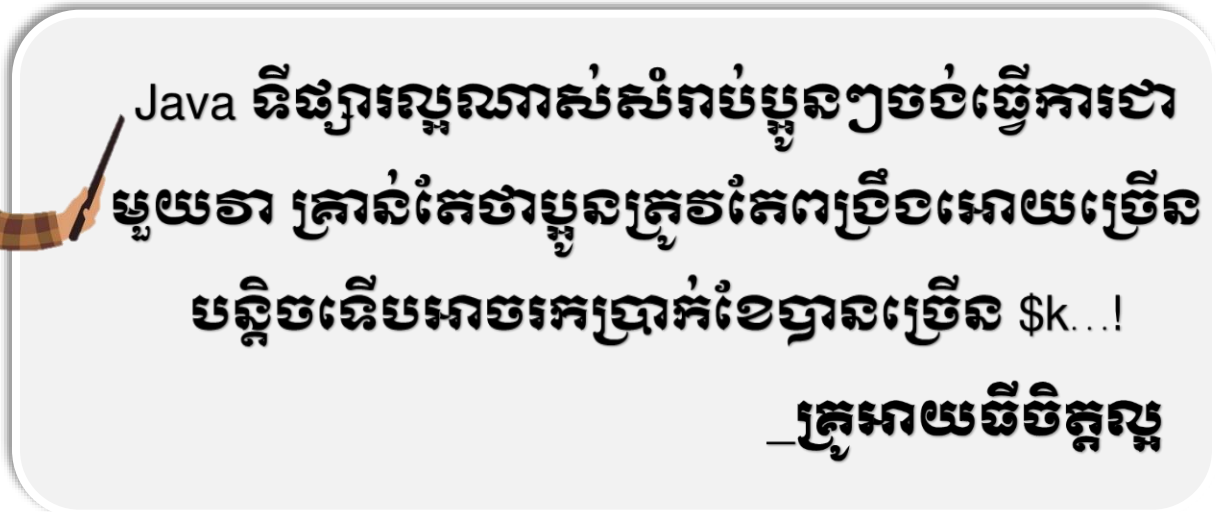
```
--------------------Configuration: <Default>--------
Form Incremental Loop
1    2    3    4    5    6    7    8    9    10
Form Decremental Loop
10    9    8    7    6    5    4    3    2    1
Process completed.
```

3.3. Do .....while Loop: *គឺជាប្រភេទ* Loop *ដែលធ្វើការត្រួតពិនិត្យលទ្ធផល ម្តងហើយទើបវាត្រួតពិនិត្យនូវ លក្ខណ្ឌ ជាក្រោយ និងតំលៃទាំង ៣ត្រូវនៅ ផ្សេងៗគ្នា។*

**ឧទាហរណ៍៖**

Start Page | LoopSt.java *

```
1  import java.util.*;
2  public class LoopSt {
3   public static void main (String[] args) {
4     int i;
5     System.out.println ("Form Incremental Loop");
6     i=1; //Initialize
7     do{
8       System.out.print(i + "    ");
9       i++; //Step
10    }while(i<=10); //Condition
11    System.out.println ("\nForm Decremental Loop");
12     i=10; //Initialize
13
14   do {
15      System.out.print(i + "    ");
16      i--; //Step
17    }while(i>=1);//Condition
18  }
19 }
```



# លំហាត់អនុវត្តន៍(កែកូដ)

Start Page | LoopSt.java

```
1  import java.util.*;
2  public class LoopSt {
3   public static void main (String[] args) {
4     double sum;
5     int n,i;
6     String op,st;
7     Scanner objin=new Scanner(System.in);
8    do{
9     System.out.println ("A. Sum Loop1");
10    System.out.println ("B. Sum Loop2");
11    System.out.println ("C. Sum Loop3");
12    System.out.println ("D. Sum Loop4");
13    System.out.println ("E. Sum Loop5");
14    System.out.println ("F. Sum Loop6");
15    System.out.println ("Choose One(A-F):");
16    op=objin.next();
17    System.out.println ("Input Number of Loop:");
18    n=objin.nextInt();
19    switch(op)
20    {
21     case "A":
22     case "a":{
23              sum=0.0;
24              for(i=1;i<n;i++)
25              {
26                  sum=sum+i;
27              }
28              System.out.println ("Sum of Loop1=" + sum);
29          }break;
30     case "B":
31     case "b":{
32              sum=0.0;
33              for(i=1;i<n;i++)
34              {
35                  sum=sum+Math.sqrt(i);
36              }
37              System.out.println ("Sum of Loop2=" + sum);
38          }break;
39     case "C":
40     case "c":{
41              sum=0.0;
42              for(i=1;i<n;i++)
43              {
44                  sum=sum+Math.pow(i,3);
45              }
46              System.out.println ("Sum of Loop3=" + sum);
47          }break;
```

```
48      case "D":
49      case "d":{
50              sum=0.0;
51              for(i=1;i<n;i++)
52              {
53                  sum=sum+Math.sin(i);
54              }
55              System.out.println ("Sum of Loop4=" + sum);
56          }break;
57      case "e":
58      case "E":{
59              sum=0.0;
60              for(i=1;i<n;i++)
61              {
62                  sum=sum+Math.log(i);
63              }
64              System.out.println ("Sum of Loop5=" + sum);
65          }break;
66      }
67      System.out.println ("Press Yes to Continue....!");
68      st=objin.next();
69    }while(st.equals("yes"));
70
71
72  }
73  }
```

3.4. For Each Loop: *គឺជាប្រភេទ* Loop *ដែលប្រើប្រាស់សំរាប់ទាញយកទិន្នន័យចេញពី សំនុំដូចជា* Array, Collection, File, Database,...*។*

**ឧទាហរណ៍ ១៖**

Start Page | LoopSt.java *

```
1  import java.util.*;
2  public class LoopSt {
3   public static void main (String[] args) {
4         int [] numbers = {10, 20, 30, 40, 50};
5
6         for(int x : numbers ) {
7            System.out.print( x );
8            System.out.print(",");
9         }
10        System.out.print("\n");
11        String [] names = {"James", "Larry", "Tom", "Lacy"};
12
13        for( String name : names ) {
14           System.out.print( name );
15           System.out.print(",");
16        }
17    }
18  }
```

## ឧទាហរណ៍ ២៖

```java
/* Program: Random number generator
 * Written by: Chaitanya from beginnersbook.com
 * Input: None
 * Output:Random number between o and 200*/
import java.util.*;
class GenerateRandomNumber {
   public static void main(String[] args) {
      int counter;
      Random rnum = new Random();
      /* Below code would generate 5 random numbers
       * between 0 and 200.
       */
      System.out.println("Random Numbers:");
      System.out.println("***************");
      for (counter = 1; counter <= 20; counter++) {
         System.out.println(rnum.nextInt(200));
      }
   }
}
```

## ឧទាហរណ៍៣៖

Start Page | LoopSt.java ×

```java
import java.util.Scanner;
class LoopSt
{
   public static void main(String args[])
   {
    int temp;
    boolean isPrime=true;
    Scanner scan= new Scanner(System.in);
    System.out.println("Enter any number:");
    //capture the input in an integer
    int num=scan.nextInt();
        scan.close();
    for(int i=2;i<=num/2;i++)
    {
           temp=num%i;
       if(temp==0)
       {
          isPrime=false;
          break;
       }
    }
    //If isPrime is true then the number is prime else not
    if(isPrime)
       System.out.println(num + " is a Prime Number");
    else
       System.out.println(num + " is not a Prime Number");
   }
}
```

## ឧទាហរណ៍៥៖

Start Page | LoopSt.java

```java
/* Program: It Prints Floyd's triangle based on user inputs
 * Written by: Chaitanya from beginnersbook.com
 * Input: Number of rows
 * output: floyd's triangle*/
import java.util.Scanner;
class LoopSt
{
    public static void main(String args[])
    {
       int rows, number = 1, counter, j;
       //To get the user's input
       Scanner input = new Scanner(System.in);
       System.out.println("Enter the number of rows for floyd's triangle:");
       //Copying user input into an integer variable named rows
       rows = input.nextInt();
       System.out.println("Floyd's triangle");
       System.out.println("****************");
       for ( counter = 1 ; counter <= rows ; counter++ )
       {
           for ( j = 1 ; j <= counter ; j++ )
           {
                System.out.print(number+" ");
                //Incrementing the number value
                number++;
           }
           //For new line
           System.out.println();
       }
   }
}
```

## ឧទាហរណ៍ទី៥៖

Start Page | LoopSt.java

```
1  import java.util.Scanner;
2  class LoopSt
3  {
4     public static void main(String[ ] arg)
5     {
6      boolean isVowel=false;;
7      Scanner scanner=new Scanner(System.in);
8      System.out.println("Enter a character : ");
9      char ch=scanner.next().charAt(0);
10     scanner.close();
11     switch(ch)
12     {
13        case 'a' :
14        case 'e' :
15            case 'i' :
16        case 'o' :
17        case 'u' :
18        case 'A' :
19        case 'E' :
20        case 'I' :
21        case 'O' :
22        case 'U' : isVowel = true;
23     }
24     if(isVowel == true) {
25        System.out.println(ch+" is  a Vowel");
26     }
27     else {
28        if((ch>='a'&&ch<='z')||(ch>='A'&&ch<='Z'))
29         System.out.println(ch+" is a Consonant");
30        else
31         System.out.println("Input is not an alphabet");
32         }
33    }
34 }
```

## ឧទាហរណ៍ទី៦៖

```java
import java.util.Scanner;
class LoopSt
{
  public static void main(String args[])
  {
    Scanner input = new Scanner( System.in );
    System.out.print("Enter a decimal number : ");
    int num =input.nextInt();
    /* Method 1:
     * Using predefined method toOctalString(int)
     * Pass the decimal number to this method and
     * it would return the equivalent octal number
     */
    String octalString = Integer.toOctalString(num);
    System.out.println("Method 1: Decimal to octal: " + octalString);
    /* Method 2:
     * Writing your own logic: Here we will write
     * our own logic for decimal to octal conversion
     */
    // For storing remainder
    int rem;

    // For storing result
    String str="";

    // Digits in Octal number system
    char dig[]={'0','1','2','3','4','5','6','7'};
    while(num>0)
    {
       rem=num%8;
       str=dig[rem]+str;
       num=num/8;
    }
    System.out.println("Method 2: Decimal to octal: "+str);
  }
}
```

## ឧទាហរណ៍៧៖

Start Page | LoopSt.java *

```java
import java.util.Scanner;
class loopSt
{
   public static void main(String args[])
   {
     Scanner input = new Scanner( System.in );
     System.out.print("Enter a decimal number : ");
     int num =input.nextInt();
     // For storing remainder
     int rem;

     // For storing result
     String str2="";

     // Digits in hexadecimal number system
     char hex[]={'0','1','2','3','4','5','6','7','8','9','A','B','C','D','E','F'};

     while(num>0)
     {
       rem=num%16;
       str2=hex[rem]+str2;
       num=num/16;
     }
     System.out.println("Method 2: Decimal to hexadecimal: "+str2);
   }
}
```

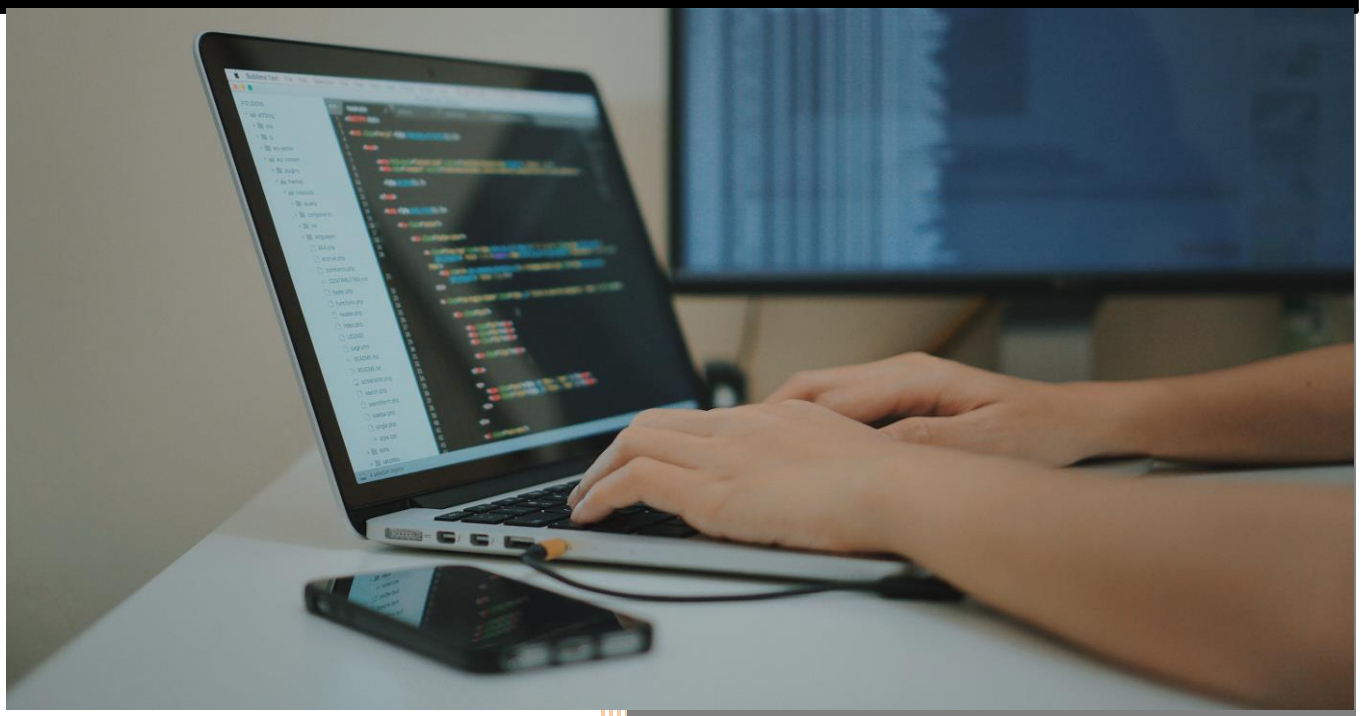
"តាំងចិត្តអោយរឹងដូចថ្ម, ប្រឹងពង្រឹងជំនាញ Java នេះអោយខ្លាំង អាចក្លាយជា Java Developerឬ ចង់បន្តទៅ Mobile ក៏បាន"

_គ្រូអោយធីចិត្តល្អ

Build Your IT Skill

# ណែនាំស្គាល់ពី អនុគ្គមន៍ របស់ Java

## Introduction Function Java programing




រៀបរៀងដោយៈ

សាស្ត្រាចារ្យ: **គ្រូអោយឆីចិត្តល្អ**

អនុបណ្ឌិតពត៌មានវិទ្យា និង

គ្រប់គ្រង់ (MBA)

# ណែនាំអោយស្គាល់ Function

## Function in Java

## I. ដូចម្តេចទៅដែលហៅថា Function ?

Function គឺជាវិធីសាស្ត្រដោះស្រាយបញ្ហាដោយបែងចែកការដោះស្រាយទៅតាមផ្នែក ឬ Block នីមួយៗច្បាស់លាស់។ ផលប្រយោជន៍នៃការប្រើប្រាស់នូវ Function ដូចជា៖

- ងាយស្រួលស្វែងរក កូដ Error
- ងាយស្រួលកែកូដ នូវ កូដ Error
- កាត់បន្ថយការសរសេរកូដច្រំដែរបានច្រើន -ល-។

**ប្រភេទនៃ Function គេបែងចែកជា ពីរប្រភេទ៖**

១) Non Return Function: គឺជាប្រភេទនៃ Function ដែលដោះស្រាយបញ្ហាបញ្ចប់រួច មិនបោះលទ្ធផលទៅក្រៅខ្លួនទេ។ ការបង្កើតនូវ return function ត្រូវប្រើប្រាស់នូវ Keyword void ដើម្បីបង្កើតវាឡើង។

**ឧទាហរណ៍ ១៖**

FunctionDemo.java

```
import java.util.*;
public class FunctionDemo {
    //Non Return function with no Parameter
 void Sum1()
 {
    int x,y;
    x=100;
    y=200;
    System.out.println ("Result of X+Y=" + (x+y));
 }
   //Non Return function with paramter 2
 void Sum2(int x,int y)
 {
    System.out.println ("Result of X+Y=" + (x+y));
 }

    public FunctionDemo() {
        //Calling function
        Sum1();
        Sum2(100,400);
    }
    public static void main (String[] args) {
      new FunctionDemo();
    }

}
```

## ឧទាហរណ៍ ២៖

```java
public class swappingExample {

    public static void main(String[] args) {
        int a = 30;
        int b = 45;
        System.out.println("Before swapping, a = " + a + " and b = " + b);

        // Invoke the swap method
        swapFunction(a, b);
        System.out.println("\n**Now, Before and After swapping values will be same here**:");
        System.out.println("After swapping, a = " + a + " and b is " + b);
    }

    public static void swapFunction(int a, int b) {
        System.out.println("Before swapping(Inside), a = " + a + " b = " + b);

        // Swap n1 with n2
        int c = a;
        a = b;
        b = c;
        System.out.println("After swapping(Inside), a = " + a + " b = " + b);
    }
}
```

## ឧទាហរណ៍ ៣៖

```java
public class ExampleVoid {

    public static void main(String[] args) {
        methodRankPoints(255.7);
    }

    public static void methodRankPoints(double points) {
        if (points >= 202.5) {
            System.out.println("Rank:A1");
        }else if (points >= 122.4) {
            System.out.println("Rank:A2");
        }else {
            System.out.println("Rank:A3");
        }
    }
}
```

២). Return function: *គឺជាប្រភេទ* Function *ដែលក្រោយពីការដោះស្រាយបញ្ហាចប់សព្វគ្រប់ត្រូវតែបោះលទ្ធផលចេញទៅក្រៅ* function *វិញតាមរយៈ* Keyword return។

**ឧទាហរណ៍ទី៖**

FunctionDemo.java

```
import java.util.*;
public class FunctionDemo {
    //Return function with no Parameter
 int Sum1()
 {
    int x,y;
    x=100;
    y=200;
   return (x+y);
 }
   // Return function with paramter 2
int Sum2(int x,int y)
 {
      return (x+y);
 }
 // Return function with paramter 2

double  Sum3(double x,double y,double z)
 {
      return (x+y+z);
 }
    public FunctionDemo() {
        //Calling function
        System.out.println("Calling function Sum1=" + Sum1());
        System.out.println("Calling function Sum2=" + Sum2(100,400));
        System.out.println("Calling function Sum2=" + Sum3(45.9,25.6,36.8));
    }
    public static void main (String[] args) {
      new FunctionDemo();
    }

}
```

## ឧទាហរណ៍២៖

```java
public class ExampleMinNumber {

   public static void main(String[] args) {
      int a = 11;
      int b = 6;
      int c = minFunction(a, b);
      System.out.println("Minimum Value = " + c);
   }

   /** returns the minimum of two numbers */
   public static int minFunction(int n1, int n2) {
      int min;
      if (n1 > n2)
         min = n2;
      else
         min = n1;

      return min;
   }
}
```

## ឧទាហរណ៍ ៣៖

```java
public class Program {

    static int cube(int value) {
        // Return number to the power of 3.
        return (int) Math.pow(value, 3);
    }

    static int getVolume(int size) {
        // Return cubed number.
        return cube(size);
    }

    public static void main(String[] args) {

        // Assign to the return value of getVolume.
        int volume = getVolume(2);
        System.out.println(volume);
    }
}
```

## 4. ការហៅ function បន្តាក់គ្នា

*ចំពោះការហៅ* Function *បន្តាក់គ្នាសំដៅលើអ្នកអាចហៅ* Function *បន្តគ្នាពីក្នុង* Block *មួយទៅកាន់* Block *ផ្សេងៗគ្នាទៀតៗ*

**ឧទាហរណ៍ៈ**

FunctionDemo.java

```
import java.util.*;
public class FunctionDemo {
   // Return function with paramter 2
int Sum2(int x,int y)
 {
      return (x+y);
 }
 // Return function with paramter 2
int Sum3(int a,int b,int c,int d)
{
    return Sum2(a,b)+Sum2(c,d);
}
int Sum4(int a,int b,int c)
{
    return Sum2(a,b)+c;
}
    public FunctionDemo() {
        //Calling function
        System.out.println("Calling function Sum2=" + Sum2(23,5));
        System.out.println("Calling function Sum3=" + Sum3(100,400,6,8));
        System.out.println("Calling function Sum4=" + Sum4(45,78,10));
    }
    public static void main (String[] args) {
      new FunctionDemo();
    }

}
```

# លំហាត់អនុវត្តន៍

១)

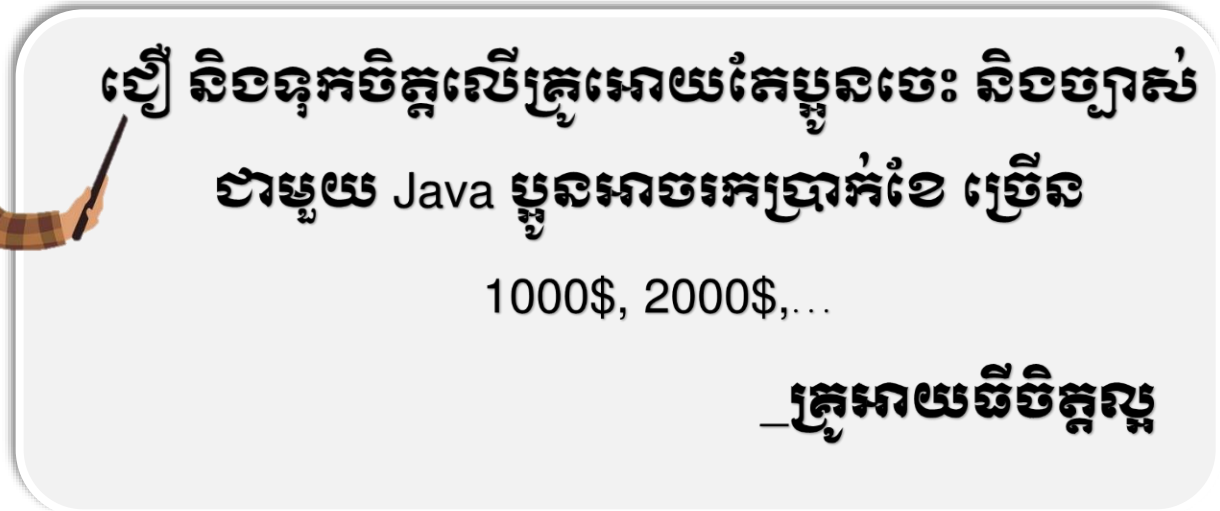
FunctionDemo.java

```
import java.util.*;
public class FunctionDemo {
  void ReversString()
  {
    String original, reverse = "";
      Scanner in = new Scanner(System.in);

      System.out.println("Enter a string to reverse");
      original = in.nextLine();

      int length = original.length();

      for ( int i = length - 1 ; i >= 0 ; i-- )
         reverse = reverse + original.charAt(i);

      System.out.println("Reverse of entered string is: "+reverse);
  }


    public FunctionDemo() {
        //Calling function
        ReversString();
    }
    public static void main (String[] args) {
      new FunctionDemo();
    }

}
```

៦)

FunctionDemo.java

```
import java.util.*;
public class FunctionDemo {
  void CheckDate()
  {
 int day, month, year;
      int second, minute, hour;
      GregorianCalendar date = new GregorianCalendar();

      day = date.get(Calendar.DAY_OF_MONTH);
      month = date.get(Calendar.MONTH);
      year = date.get(Calendar.YEAR);

      second = date.get(Calendar.SECOND);
      minute = date.get(Calendar.MINUTE);
      hour = date.get(Calendar.HOUR);

      System.out.println("Current date is  "+day+"/"+(month+1)+"/"+year);
      System.out.println("Current time is  "+hour+" : "+minute+" : "+second);

  }


    public FunctionDemo() {
        //Calling function
        CheckDate();
    }
    public static void main (String[] args) {
      new FunctionDemo();
    }

}
```



៣)

FunctionDemo.java *

```java
import java.util.*;
import java.io.*;
public class FunctionDemo {
   void CheckNotepad()
   {  Runtime rs = Runtime.getRuntime();
     try {
       rs.exec("notepad");
     }
     catch (IOException e) {
       System.out.println(e);
     }
   }
     public FunctionDemo() {
         //Calling function
        CheckNotepad();
     }
     public static void main (String[] args) {
       new FunctionDemo();
     }

}
```

៤)

```java
public class Program {

    static void displayPassword(String password) {
        // Write the password to the console.
        System.out.println("Password: " + password);
        // Return if our password is long enough.
        if (password.length() >= 5) {
            return;
        }
        System.out.println("Password too short!");
        // An implicit return is here.
    }

    public static void main(String[] args) {
        displayPassword("furball");
        displayPassword("cat");
    }
}
```