Core Java Programming practices by Ashish Thakur

core-java-programmatic-materail-set2 (Ashish Thakur)

app7 : binary representation
app8 : bitwise operators
app9 : if blocks
app10 : command line arguments
app11 : nested if blocks
app12 : else blocks
app13 : if - else blocks inside if block
app14 : if - else blocks inside else block
app15 : switch-case-default
app16 : ternary operator

App7:

```
class A
{
	public static void main(String[] args)
	{
		int i = 45;
		String s1 = "101101";
		System.out.println("Binary format of " + i + " is " +
Integer.toBinaryString(i));
		System.out.println("Decimal format of " + s1 + " is " +
Integer.parseInt(s1, 2));
```

```
        }
}
/*
        binary
        -------

        45 / 2  =  22  +  r1
        22 / 2  =  11  +  r0
        11 / 2  =   5  +  r1
         5 / 2  =   2  +  r1
         2 / 2  =   1  +  r0
         1 / 2  =   0  +  r1

                    101101


        decimal
        --------
        101101  =
                    (2 power 0) * 1  +
                    (2 power 1) * 0   +
                    (2 power 2) * 1  +
                    (2 power 3) * 1  +
                    (2 power 4) * 0  +
```

```
                (2 power 5) * 1

                = 1 * 1 +
                  2 * 0 +
                  4 * 1 +
                  8 * 1 +
                  16 * 0 +
                  32 * 1        =    1   +  4   + 8  +  32 =  45

*/

Output:
Binary format of 45 is 101101
Decimal format of 101101 is 45
```

```
class B
{
	public static void main(String[] args)
	{
		int i = 125;
		String s1 = "1111101";
		System.out.println("binary format for " + i + " is " +
Integer.toBinaryString(i));
		System.out.println("decimal format for " + s1 + " is "
+ Integer.parseInt(s1, 2));
```

```
        }
}

/*
        binary
        --------

        125 / 2 = 62  +  r1
         62 / 2 = 31  +  r0
         31 / 2 = 15  +  r1
         15 / 2 =  7  +  r1
          7 / 2 =  3  +  r1
          3 / 2 =  1  +  r1
          1 / 2 =  0  +  r1

        binary string for 125  :  1111101


        decimal
        ---------
        1111101

        =
        (2 power 0) * 1
```

```
	(2 power 1) * 0
	(2 power 2) * 1
	(2 power 3) * 1
	(2 power 4) * 1
	(2 power 5) * 1
	(2 power 6) * 1 =

	1 + 4  + 8 + 16 + 32  +  64 = 125
*/
Output:
binary format for 125 is 1111101
decimal format for 1111101 is 125
```

```
class C
{
	public static void main(String[] args)
	{
		System.out.println("binary value for 723 is " +
Integer.toBinaryString(723));
		System.out.println("decimal value for 1011010011 is "
+ Integer.parseInt("1011010011", 2));
	}
}
/*
	binary
```

---

723 / 2 = 361 + r1
361 / 2 = 180 + r1
180 / 2 = 90 + r0
90 / 2 = 45 + r0
45 / 2 = 22 + r1
22 / 2 = 11 + r0
11 / 2 = 5 + r1
5 / 2 = 2 + r1
2 / 2 = 1 + r0
1 / 2 = 0 + r1

binary string for 723 : 1011010011

decimal

1011010011

(2 power 0) * 1
(2 power 1) * 1
(2 power 2) * 0
(2 power 3) * 0
(2 power 4) * 1

```
        (2 power 5) * 0
        (2 power 6) * 1
        (2 power 7) * 1
        (2 power 8) * 0
        (2 power 9) * 1
            = 1  +  2  +  16  +  64  + 128 +  512
*/
```

Output:

```
binary value for 723 is 1011010011
decimal value for 1011010011 is 723
```

App8:

```
class A
{
        public static void main(String[] args)
        {
                System.out.println(25 | 45);        //          | is
bitwise or
                System.out.println(25 & 45);        //          & is
bitwise and
                System.out.println(25 ^ 45);        //          ^ is
bitwise xor
        }
}
```

```
/*
      25   :    011001
      45   :    101101
        -----------------------
     bitwise or    111101=   61
     bitwise and  001001=9
    bitwise xor   110100=52
*/
Output:
      61
            9
            52
```

```
class B
{
      public static void main(String[] args)
      {
            System.out.println(95 | 82);       //          | is
bitwise or
            System.out.println(95 | 82);       //          & is
bitwise and
            System.out.println(95 | 82);       //          ^ is
bitwise xor
      }
```

```
}

/*
      95   :   1011111
      82   :   1010010
-----------------------
bitwise or    1011111          =      95
bitwise and      1010010       =           82
bitwise xor   0001101          =           13
*/
Output:
95
95
95
```

```
class C
{
      public static void main(String[] args)
      {
            System.out.println(65 << 1);   //    left shift by 1
            System.out.println(65 << 2);  //    left shift by 2
            System.out.println(65 >> 1);   //    right shift by 1
            System.out.println(65 >> 2);  //    right shift by 2
      }
}
```

```
/*
            65          :     1000001
left shift by 1     :     10000010        =       130
left shift by 2     :     100000100       =       260

            65              :     1000001
right shift by 1        :     0100000     =       32
right shift by 2        :     0010000     =       16

*/
Output:
130
260
32
16
```

```
class D
{
    public static void main(String[] args)
    {
        System.out.println(115 << 1);  //   left shift by 1
        System.out.println(115 << 2);  //   left shift by 2
        System.out.println(115 >> 1);  //   right shift by 1
        System.out.println(115 >> 2);  //   right shift by 2
```

```
	}
}

/*
		115		:	01110011
left shift by 1	:	011100110		=		230
left shift by 2	:	0111001100		=		460

		115			:	01110011	=
right shift by 1	:	00111001	=	57
right shift by 2	:	00011100	=	28
*/
Output:
230
460
57
28
```

```
class E
{
	public static void main(String[] args)
	{
		System.out.println(~6);		//compliment
operator
```

```
            System.out.println(~20);            //compliment
operator
            System.out.println(~45);            //compliment
operator
      }
}

/*
            6           :           110
                                    001
                                                        2's
compliment
                                                                    --------
----------
                                        1's compliment : 110
                                    2's compliment : 110
                                                    1
                                                ---------
                                            111 = 7

                        20    :           10100
                                          01011

2's compliment
```

1's compliment : 10100

2's compliment : 10100

1

10101 = 21

45

---

45 : 101101

010010

2's compliment

1's compliment : 101101

2's compliment : 101101

1

101110 = 46

https://www.javatpoint.com/2s-complement-in-digital-electronics

*/

Output:

-7

-21

-46

App9:

```
class A
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true)
		{
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
		}
		System.out.println("main end");
	}
}
```

Output:

main begin

if stmt1

if stmt2

if stmt3

```
main end
```

```
class B
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
		}
		System.out.println("main end");
	}
}
```

Output:

```
main begin
main end
```

```
class C
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(!true)
```

```
            {
                  System.out.println("if  stmt1");
                  System.out.println("if stmt2");
                  System.out.println("if stmt3");
            }
            System.out.println("main end");
      }
}
```

Output:

```
main begin
main end
```

```
class D
{
      public static void main(String[] args)
      {
            System.out.println("main begin");
            if(!false)
            {
                  System.out.println("if  stmt1");
                  System.out.println("if stmt2");
                  System.out.println("if stmt3");
            }
            System.out.println("main end");
      }
```

```
}
Output:
main begin
if stmt1
if  stmt2
if  stmt3
main end
```

```
class E
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		boolean b1 = true;
		if(b1)
		{
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
		}
		System.out.println("main end:" + b1);
	}
}
Output:
main begin
```

```
if  stmt1
if stmt2
if stmt3
main end:true
```

```
class F
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		boolean b1 = false;
		if(b1)
		{
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
		}
		System.out.println("main end:" + b1);
	}
}
Output:
main begin
main end:false
```

```
class G
{
```

```
	public static void main(String[] args)
	{
		System.out.println("main begin");
		boolean b1 = false;
		if(!b1)
		{
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
		}
		System.out.println("main end:" + b1);
	}
}
```

Output:

```
main begin
if stmt1
if stmt2
if stmt3
main end:false
```

```
class H
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
```

```
            boolean b1 = true;
            if(!b1)
            {
                  System.out.println("if  stmt1");
                  System.out.println("if stmt2");
                  System.out.println("if stmt3");
            }
            System.out.println("main end:" + b1);
      }
}
```

Output:

```
main begin
main end:true
```

```
class I
{
      public static void main(String[] args)
      {
            System.out.println("main begin");
            boolean b1 = true;
            if(b1 == false)
            {
                  System.out.println("if  stmt1");
                  System.out.println("if stmt2");
                  System.out.println("if stmt3");
```

```
            }
            System.out.println("main end:" + b1);
        }
}
```

Output:

```
main begin
main end:true
```

```
class J
{
        public static void main(String[] args)
        {
                System.out.println("main begin");
                boolean b1 = true;
                if(b1 != false)
                {
                        System.out.println("if  stmt1");
                        System.out.println("if stmt2");
                        System.out.println("if stmt3");
                }
                System.out.println("main end:" + b1);
        }
}
```

Output:

```
main begin
```

```
if  stmt1
if stmt2
if stmt3
main end:true
```

```
class K
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		boolean b1 = true;
		if(b1 = false)
		{
			System.out.println("if stmt1");
		}
		System.out.println("main end:" + b1);
	}
}
Output:
main begin
main end:false
```

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

```
            System.out.println("main begin");
            boolean b1 = true;
            if(b1 = !b1)
            {
                  System.out.println("if  stmt1");
                  System.out.println("if stmt2");
                  System.out.println("if stmt3");
            }
            System.out.println("main end:" + b1);
      }
}
```

Output:

```
main begin
main end:false
```

```
class M
{
      public static void main(String[] args)
      {
            System.out.println("main begin");
            boolean b1 = !true;
            if(b1 = !b1)
            {
                  System.out.println("if stmt1");
                  System.out.println("if stmt2");
```

```
                System.out.println("if stmt3");
            }
            System.out.println("main end:" + b1);
        }
}
```

Output:

```
main begin
if stmt1
if stmt2
if stmt3
main end:true
```

```
class N
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i = 10;
        if(i = 10)
        {
            System.out.println("if  stmt1");
            System.out.println("if stmt2");
            System.out.println("if stmt3");
        }
        System.out.println("main end:" + i);
```

```
	}
}
```

Output:

```
N.java:7: error: incompatible types: int cannot be converted to
boolean
		if(i = 10)
		    ^
1 error
```

```
class O
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		int i = 10;
		if(i == 10)
		{
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
		}
		System.out.println("main end:" + i);
	}
}
```

Output:

```
main begin
if stmt1
if stmt2
if stmt3
main end:10
```

```
class P
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		int i = 0;
		if(i++ == 0)
		{
			i++;
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
		}
		System.out.println("main end:" + i);
	}
}
```

Output:

```
main begin
if stmt1
```

```
if stmt2
if stmt3
main end:2
```

```
class Q
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		int i = 0;
		if(i++ == 1)
		{
			i++;
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
		}
		System.out.println("main end:" + i);
	}
}
```

Output:

```
main begin
main end:1
```

```
class R
```

```
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		int i = 0;
		if(true || i++ == 1)
		{
			i++;
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
		}
		System.out.println("main end:" + i);
	}
}
```

Output:

```
main begin
if stmt1
if stmt2
if stmt3
main end:1
```

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

```
	{
		System.out.println("main begin");
		int i = 0;
		if(false || i++ == 1)
		{
			i++;
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
		}
		System.out.println("main end:" + i);
	}
}
```

Output:

main begin

main end:1

```
class T
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		int i = 0;
		if(i++ == 0 || i++ == 1)
		{
```

```
                i++;
                System.out.println("if  stmt1");
                System.out.println("if stmt2");
                System.out.println("if stmt3");
            }
            System.out.println("main end:" + i);
        }
}
```

Output:

```
main begin
if stmt1
if stmt2
if stmt3
main end:2
```

```
class U
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i = 0;
        if(true && i++ == 1)
        {
            i++;
            System.out.println("if stmt1");
```

```
                System.out.println("if stmt2");
                System.out.println("if stmt3");
            }
            System.out.println("main end:" + i);
        }
}
```

Output:

```
main begin
main end:1
```

```
class V
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i = 0;
        if(false && i++ == 0)
        {
            i++;
            System.out.println("if  stmt1");
            System.out.println("if stmt2");
            System.out.println("if stmt3");
        }
        System.out.println("main end:" + i);
    }
```

```
}
```

Output:

```
main begin
main end:0
```

```
class W
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		int i = 0;
		if(i++ == 0 && i++ == 0)
		{
			i++;
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
		}
		System.out.println("main end:" + i);
	}
}
```

Output:

```
main begin
main end:2
```

```
class X
```

```
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		int i = 0;
		if(i++ == 0 && ++i == i++)
		{
			i++;
		}
		System.out.println("main end:" + i);
	}
}
```

Output:

```
main begin
main end:4
```

```
class Y
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		int i = 0;
		if(i++ == i++)
		{
			i++;
```

```
                System.out.println("if  stmt1");
                System.out.println("if stmt2");
                System.out.println("if stmt3");
            }
            System.out.println("main end:" + i);
        }
}
```

Output:

```
main begin
main end:2
```

```
class Z
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i = 0;
        if(i++ == ++i)
        {
            i++;
            System.out.println("if  stmt1");
            System.out.println("if stmt2");
            System.out.println("if stmt3");
        }
        System.out.println("main end:" + i);
```

```
	}
}
```

Output:

```
main begin
main end:2
```

```
class Z1
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		int i = 0;
		if(++i == i++)
		{
			i++;
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
		}
		System.out.println("main end:" + i);
	}
}
```

Output:

```
main begin
if stmt1
```

```
if stmt2
if stmt3
main end:3
```

```
class Z2
{
	public static void main(String[] args)
	{
		int i = 0;
		if(/* some thing */)
		{
			System.out.println("done");
		}
	}
}
//which option is suitable at /* some thing */ to print done
/*
a.		i++ == i++
b.		i++ == ++i
c.		++i == ++i
d.		++i == i++
e.		0++ == 0++
*/
Output:
Z2.java:6: error: illegal start of expression
```

```
            if(/* some thing */)
                              ^
```

```
class Z3
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
			System.out.println("if stmt4");
		System.out.println("main end");
	}
}
Output:
main begin
if stmt2
if stmt3
if stmt4
main end
```

```
class Z4
{
	public static void main(String[] args)
```

```
	{
		System.out.println("main begin");
		if(false);
			System.out.println("if  stmt1");
			System.out.println("if stmt2");
			System.out.println("if stmt3");
			System.out.println("if stmt4");
		System.out.println("main end");
	}
}
```

Output:

```
main begin
if stmt1
if  stmt2
if  stmt3
if  stmt4
main end
```

```
class Z5
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true)
		{
```

```
                int         i         =         0;
                System.out.println("if stmt1");
                System.out.println("if stmt2");
                System.out.println("if stmt3");
                System.out.println("if stmt4");
                i ++;
                i = i + 9;
            }
            System.out.println("main end:" + i);
        }
}
```

Output:

```
Z5.java:16: error: cannot find symbol
            System.out.println("main end:" + i);
                                           ^
```

```
class Z6
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i = 0;
        if(true)
        {
            System.out.println("if stmt1");
```

```
                System.out.println("if stmt2");
                System.out.println("if stmt3");
                System.out.println("if stmt4");
                i ++;
                i = i + 9;
            }
            System.out.println("main end:" + i);
        }
}
Output:
main begin
if stmt1
if stmt2
if stmt3
if stmt4
main end:10
```

```
class Z7
{
        public static void main(String[] args)
        {
                System.out.println("main begin");
                int i = 0;
                if(false)
                        System.out.println("if stmt1:" + i++);
```

```
                System.out.println("if stmt2:" + i++);
                System.out.println("if stmt3:" + i++);
                System.out.println("if stmt4:" + i++);
                System.out.println("if stmt5:" + i++);
        System.out.println("main end:" + i);
    }
}
```

Output:

```
main begin
if stmt2:0
if stmt3:1
if stmt4:2
if stmt5:3
main end:4
```

```
class Z8
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i = 0;
        if(false);
            System.out.println("if stmt1:" + i++);
            System.out.println("if stmt2:" + i++);
            System.out.println("if stmt3:" + i++);
```

```
System.out.println("if stmt4:" + i++);
System.out.println("if stmt5:" + i++);


            System.out.println("main end:" + i);
        }
    }
    Output:
    main begin
    if stmt1:0
    if stmt2:1
    if stmt3:2
    if stmt4:3
    if stmt5:4
    main end:5
```

```
    class Z9
    {
        public static void main(String[] args)
        {
            System.out.println("main begin");
            int i = 0;
            if(false);
            {
                System.out.println("if stmt1:" + i++);
                System.out.println("if stmt2:" + i++);
                System.out.println("if stmt3:" + i++);
```

```
System.out.println("if stmt4:" + i++);
System.out.println("if stmt5:" + i++);


            }
            System.out.println("main end:" + i);
        }
    }
```

Output:

```
main begin
if stmt1:0
if stmt2:1
if stmt3:2
if stmt4:3
if stmt5:4
main end:5
```

```
class Z10
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i = 0;

        {
            System.out.println("block1 stmt1:" + i++);
            System.out.println("block1 stmt2:" + i++);
```

```
                System.out.println("block1 stmt3:" + i++);
                System.out.println("block1 stmt4:" + i++);
                System.out.println("block1 stmt5:" + i++);
            }

            System.out.println("main middle:" + i);

            {
                System.out.println("block2 stmt1:" + i++);
                System.out.println("block2 stmt2:" + i++);
                System.out.println("block2 stmt3:" + i++);
                System.out.println("block2 stmt4:" + i++);
                System.out.println("block2 stmt5:" + i++);
            }

            System.out.println("main end:" + i);
        }
}
```

Output:

```
main begin
block1  stmt1:0
block1  stmt2:1
block1 stmt3:2
block1 stmt4:3
```

```
block1 stmt5:4
main middle:5
block2 stmt1:5
block2 stmt2:6
block2 stmt3:7
block2 stmt4:8
block2 stmt5:9
main end:10
```

```
class Z11
{
	public static void main(String[] args)
	{
		{
			System.out.println("block1");
			System.out.println("block1");
		}

		{
			System.out.println("block2");
			System.out.println("block2");
		}
			System.out.println("middle");
		{
			System.out.println("block3");
```

```
                System.out.println("block3");
                System.out.println("block3");
                System.out.println("block3");
            }
            System.out.println("end");
        }
}
```

Output:

```
block1
block1
block2
block2
middle
block3
block3
block3
block3
end
```

```
class Z12
{
    public static void main(String[] args)
    {
        {
            int i = 10;
```

```
                System.out.println("block:" + i);
                i++;
            }
            System.out.println("main end:" + i);
        }
}
```

Output:

```
Z12.java:10: error: cannot find symbol
            System.out.println("main end:" + i);
                                           ^
```

```
class Z13
{
    public static void main(String[] args)
    {
        boolean b1;
        if(b1)
        {
            System.out.println("if body");
        }
        System.out.println("main end");
    }
}
```

Output:

```
Z13.java:6: error: variable b1 might not have been initialized
```

```
            if(b1)
              ^
```

```
class Z14
{
	public static void main(String[] args)
	{
		boolean b1;
		if(b1 = true)
		{
			System.out.println("if body");
		}
		System.out.println("main end");
	}
}
Output:
if body
main end
```

---

app10:

```
class A
{
	public static void main(String[] args)
	{
		System.out.println("Hello World!");
		System.out.println(10);
```

```
            System.out.println(1.0);
            System.out.println(true);
            int i = 20;
            System.out.println(i);
            String s1 = "abc";
            System.out.println(s1);
      }
}
```

Output:

```
Hello World!
10
1.0
true
20
Abc
```

```
class B
{
      public static void main(String[] args)
      {
            String s1 = args[0];
            System.out.println(s1);
      }
}
```

Output:

```
Exception in thread "main"
java.lang.ArrayIndexOutOfBoundsException: Index 0 out of
bounds for length 0
        at B.main(B.java:5)
```

```
class C
{
        public static void main(String[] args)
        {
                String s1 = args[0];
                String s2 = args[1];
                System.out.println(s1 + ", " + s2);
        }
}
Output:
Exception in thread "main"
java.lang.ArrayIndexOutOfBoundsException: Index 0 out of
bounds for length 0
        at C.main(C.java:5)
```

```
class D
{
        public static void main(String[] args)
        {
                String s1 = args[0];
                String s2 = args[1];
```

```
            String s3 = args[2];
            System.out.println(s1);
            System.out.println(s2);
            System.out.println(s3);
      }
}
```

Output:

```
Exception in thread "main"
java.lang.ArrayIndexOutOfBoundsException: Index 0 out of
bounds for length 0
      at D.main(D.java:5)
```

```
class E
{
      public static void main(String[] args)
      {
            String s1 = args[0];
            int i = Integer.parseInt(s1);
            int j = i + 100;
            System.out.println(i);
            System.out.println(j);
      }
}
```

Output:

```
Exception in thread "main"
java.lang.ArrayIndexOutOfBoundsException: Index 0 out of
bounds for length 0
        at E.main(E.java:5)
```

```
class F
{
        public static void main(String[] args)
        {
                int i = Integer.parseInt(args[0]);
                double j = Math.sqrt(i);
                System.out.println("square root of " + i + " is " + j);
        }
}
Output:
Exception in thread "main"
java.lang.ArrayIndexOutOfBoundsException: Index 0 out of
bounds for length 0
        at F.main(F.java:5)
```

```
class G
{
        public static void main(String[] args)
        {
                int age = Integer.parseInt(args[0]);
                if(age < 18)
```

```
            {
                  System.out.println("child");
            }
            if(age >= 18)
            {
                  System.out.println("adult");
            }
      }
}
```

Output:

```
Exception in thread "main"
java.lang.ArrayIndexOutOfBoundsException: Index 0 out of
bounds for length 0
      at G.main(G.java:5)
```

```
class H
{
      public static void main(String[] args)
      {
            boolean marriedStatus =
Boolean.parseBoolean(args[0]);
            if(marriedStatus)
            {
                  System.out.println("yes... married");
            }
```

```
            if(!marriedStatus)
            {
                  System.out.println("no... un-married");
            }
      }
}
```

Output:

```
Exception in thread "main"
java.lang.ArrayIndexOutOfBoundsException: Index 0 out of
bounds for length 0
      at H.main(H.java:5)
```

```
class I
{
      public static void main(String[] args)
      {
            int a = Integer.parseInt(args[0]), b =
Integer.parseInt(args[1]);
            int c = a + b;
            System.out.println("sum of " + a + " and " + b + " is " +
c);
      }
}
```

Output:

```
Exception in thread "main"
java.lang.ArrayIndexOutOfBoundsException: Index 0 out of
bounds for length 0
        at I.main(I.java:5)
```

```
class J
{
        public static void main(String[] args)
        {
                String s1 = args[0];
                System.out.println(s1);
        }
}
```

Output:

```
Exception in thread "main"
java.lang.ArrayIndexOutOfBoundsException: Index 0 out of
bounds for length 0
        at J.main(J.java:5)
```

```
class K
{
        public static void main(String[] args)
        {
                System.out.println(args.length);
        }
}
```

Output:

0

```
class L
{
	public static void main(String[] args)
	{
		if(args.length < 1)
		{
			System.out.println("pls supply one command line
agrument. like bellow");
			System.out.println("java -cp ../classes L
<some_thing>");
			return;
		}
		System.out.println("your input is " + args[0]);
	}
}
```

Output:

pls supply one command line agrument. like bellow

java -cp ../classes L <some_thing>

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

```
            if(args.length < 2)
            {
                  System.out.println("pls supply two command line
agrument. like bellow");
                  System.out.println("java -cp ../classes M
<first_arg> <2nd_arg>");
                  return;
            }

            String s1 = args[0];
            String s2 = args[1];
            int i = Integer.parseInt(s1);
            int j = Integer.parseInt(s2);
            int sum = i + j;
            System.out.println("sum of " + i + " and " + j + " is " +
sum);
      }
}
```

Output:

```
pls supply two command line agrument. like bellow
java -cp ../classes M <first_arg> <2nd_arg>
```

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

```
	{
		if(args.length < 2)
		{
			System.out.println("pls supply two int type
command line agrument. like bellow");
			System.out.println("java -cp ../classes N
<first_arg> <2nd_arg>");
			return;
		}
		String s1 = args[0];
		String s2 = args[1];
		try
		{
			int i = Integer.parseInt(s1);
			int j = Integer.parseInt(s2);
			int sum = i + j;
			System.out.println("sum of " + i + " and " + j + "
is " + sum);
		}
		catch (NumberFormatException ex)
		{
			System.out.println("pls supply only int type
command line arguments. like bellow");
```

```
                System.out.println("java -cp ../classes N
<first_num> <2nd_num>");
            }
        }
}
```

Output:

```
pls supply two int type command line agrument. like bellow
java -cp ../classes N <first_arg> <2nd_arg>
```

---

app11:

```
class A
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(false)
        {
            System.out.println("if1");
        }
        if(true)
        {
            System.out.println("if2");
        }
        if(false)
        {
```

```
                System.out.println("if3");
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
if2
main end
```

```
class B
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(true)
        {
            System.out.println("if1 begin");
            if(true)
            {
                System.out.println("if2 begin");
                if(false)
                {
                    System.out.println("if3");
                }
```

```
                    System.out.println("if2 end");
                }
                System.out.println("if1 end");
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
if1 begin
if2 begin
if2 end
if1 end
main end
```

```
class C
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(true)
        {
            System.out.println("if1 begin");
            if(false)
            {
```

```
                System.out.println("if2 begin");
                if(true)
                {
                        System.out.println("if3");
                }
                System.out.println("if2 end");
            }
            System.out.println("if1 end");
        }
        System.out.println("main end");
    }
}
```

Output:

```
main begin
if1 begin
if1 end
main end
```

```
class D
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(false)
        {
```

```
                System.out.println("if1 begin");
                if(true)
                {
                        System.out.println("if2 begin");
                        if(true)
                        {
                                System.out.println("if3");
                        }
                        System.out.println("if2 end");
                }
                System.out.println("if1 end");
        }
        System.out.println("main end");
    }
}
```

Output:

```
main begin
main end
```

```
class E
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(true)
```

```
        {
            System.out.println("if1 begin");
            if(true)
            {
                if(true)
                {
                    System.out.println("if3");
                }
            }
            System.out.println("if1 end");
        }
        System.out.println("main end");
    }
}
```

Output:

```
main begin
if1 begin
if3
if1 end
main end
```

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

```
            System.out.println("main begin");
            if(true)
            {
                  System.out.println("if1 begin");
                  if(false)
                  {
                        if(true)
                        {
                              System.out.println("if3");
                        }
                  }
                  System.out.println("if1 end");
            }
            System.out.println("main end");
      }
}
```

Output:

```
main begin
if1 begin
if1 end
main end
```

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

```
	{
		System.out.println("main begin");
		if(true)
		{
			System.out.println("if1 begin");
			if(true)
			{
				if(false)
				{
					System.out.println("if3");
				}
			}
			System.out.println("if1 end");
		}
		System.out.println("main end");
	}
}
```

Output:

```
main begin
if1 begin
if1 end
main end
```

```
class H
{
```

```
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true)
		{
			System.out.println("if1 begin");
			if(true && true)
			{
				System.out.println("if3");
			}
			System.out.println("if1 end");
		}
		System.out.println("main end");
	}
}
```

Output:

```
main begin
if1 begin
if3
if1 end
main end
```

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

```
	{
		System.out.println("main begin");
		if(true)
		{
			if(false)
			{
				if(true)
				{
					System.out.println("if3");
				}
			}
		}
		System.out.println("main end");
	}
}
```

Output:

```
main begin
main end
```

```
class J
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true && true && true)
```

```
            {
                System.out.println("if3");
            }
            System.out.println("main end");
        }
}
Output:
main begin
if3
main end
```

```
class K
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(true)
        {
            System.out.println("if1 begin");
            if(true)
            {
                System.out.println("if2 begin");
                if(true)
                    System.out.println("if3");
                System.out.println("if2 end");
```

```
                }
                System.out.println("if1 end");
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
if1 begin
if2 begin
if3
if2 end
if1 end
main end
```

```
class L
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(true)
        {
            System.out.println("if1 begin");
            if(true)
            {
```

```
                    if(true)
                        System.out.println("if3");
                }
                System.out.println("if1 end");
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
if1 begin
if3
if1 end
main end
```

```
class M
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(true)
        {
            System.out.println("if1 begin");
            if(true)
                if(true)
```

```
                        System.out.println("if3");
                System.out.println("if1 end");
        }
        System.out.println("main end");
    }
}
```

Output:

```
main begin
if1 begin
if3
if1 end
main end
```

```
class N
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(true)
        {
            if(true)
                if(true)
                    System.out.println("if3");
        }
        System.out.println("main end");
```

```
	}
}
```

Output:

```
main begin
if3
main end
```

```
class O
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true)
			if(true)
				if(true)
					System.out.println("if3");
		System.out.println("main end");
	}
}
```

Output:

```
main begin
if3
main end
```

```
class P
{
```

```
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true)
		if(true)
		if(true)
		System.out.println("if3");
		System.out.println("main end");
	}
}
```

Output:

```
main begin
if3
main end
```

```
class Q
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true)
		if(false)
		if(true)
		System.out.println("if3");
		System.out.println("main end");
```

```
	}
}
```

Output:

```
main begin
main end
```

```
class R
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false);
		if(true)
		if(true)
		System.out.println("if3");
		System.out.println("main end");
	}
}
```

Output:

```
main begin
if3
main end
```

---

app12:

```
class A
{
```

```
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true)
		{
			System.out.println("if");
		}
		else
		{
			System.out.println("else");
		}
		System.out.println("main end");
	}
}
```

Output:

```
main begin
if
main end
```

```
class B
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
```

```
		{
			System.out.println("if");
		}
		else
		{
			System.out.println("else");
		}
		System.out.println("main end");
	}
}
```

Output:

```
main begin
else
main end
```

```
class C
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else
```

```
            {
                  int i = 0;
                  System.out.println("else");
                  System.out.println("else");
                  System.out.println("else:" + i);
                  System.out.println("else");
                  i ++;
                  System.out.println("else:" + i);
            }
            System.out.println("main end");
      }
}
```

Output:

```
main begin
else
else
else:0
else
else:1
main end
```

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

```
            System.out.println("main begin");
            if(false)
            {
                  System.out.println("if");
            }
            else
            {
                  int i = 0;
                  System.out.println("else");
                  System.out.println("else");
                  System.out.println("else:" + i);
                  System.out.println("else");
                  i ++;
                  System.out.println("else:" + i);
            }
            System.out.println("main end:" + i);
      }
}
```

Output:

```
D.java:20: error: cannot find symbol
            System.out.println("main end:" + i);
                                           ^
```

```
class E
{
```

```
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			int i = 10;
			System.out.println("if");
		}
		else
		{
			System.out.println("else:" + i);
		}
		System.out.println("main end:" + i);
	}
}
```

Output:

```
	E.java:13: error: cannot find symbol
			System.out.println("else:" + i);
                                                ^
```

```
class F
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
```

```
            if(true)
            {
                  System.out.println("if");
            }
            else
                  System.out.println("else-stmt1");
                  System.out.println("else-stmt2");
                  System.out.println("else-stmt3");
                  System.out.println("else-stmt4");
            System.out.println("main end" );
      }
}
```

Output:

```
main begin
if
else-stmt2
else-stmt3
else-stmt4
main end
```

```
class G
{
      public static void main(String[] args)
      {
            System.out.println("main begin");
```

```
            if(true)
            {
                  System.out.println("if");
            }
            else;
                  System.out.println("else-stmt1");
                  System.out.println("else-stmt2");
                  System.out.println("else-stmt3");
                  System.out.println("else-stmt4");
            System.out.println("main end" );
      }
}
```

Output:

```
main begin
if
else-stmt1
else-stmt2
else-stmt3
else-stmt4
main end
```

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

```
            System.out.println("main begin");
            if(true)
            {
                  System.out.println("if");
            }
            else;
            {
                  System.out.println("else-stmt1");
                  System.out.println("else-stmt2");
                  System.out.println("else-stmt3");
                  System.out.println("else-stmt4");
            }
            System.out.println("main end" );
      }
}
```

Output:

```
main begin
if
else-stmt1
else-stmt2
else-stmt3
else-stmt4
main end
```

```
class I
```

```
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true);
		{
			System.out.println("if");
		}
		else;
		{
			System.out.println("else-stmt1");
			System.out.println("else-stmt2");
			System.out.println("else-stmt3");
			System.out.println("else-stmt4");
		}
		System.out.println("main end" );
	}
}
```

Output:

```
I.java:10: error: 'else' without 'if'
		else;
		^
```

```
class J
{
```

```
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true)
		{
			System.out.println("if");
		}
		int i = 10;
		else
		{
			System.out.println("else-stmt1");
			System.out.println("else-stmt2");
			System.out.println("else-stmt3");
			System.out.println("else-stmt4");
		}
		System.out.println("main end" );
	}
}
```

Output:

```
J.java:11: error: 'else' without 'if'
		 else
		 ^
```

```
class K
{
```

```
	public static void main(String[] args)
	{
		System.out.println("main begin");
		else
		{
			System.out.println("else-stmt1");
			System.out.println("else-stmt2");
			System.out.println("else-stmt3");
			System.out.println("else-stmt4");
		}
		System.out.println("main end" );
	}
}
```

Output:

```
J
K.java:12: error: 'else' without 'if'
		 else
```

```
class L
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		int i = 0;
```

```
            if(true)
            {
                  System.out.println("if block");
                  i++;
            }
            else
            {
                  System.out.println("else-block");
                  i = i + 10;
            }
            System.out.println("main end:" + i );
      }
}
```

Output:

```
main begin
if block
main end:1
```

```
class M
{
      public static void main(String[] args)
      {
            System.out.println("main begin");
            int i = 0;
            if(i++ == 0 && i++ == 1)
```

```
            {
                System.out.println("if block");
                i++;
            }
            else
            {
                System.out.println("else-block");
                i = i + 10;
            }
            System.out.println("main end:" + i );
        }
}
```

Output:

```
main begin
if block
main end:3
```

```
class N
{
        public static void main(String[] args)
        {
            System.out.println("main begin");
            int i = 0;
            if(i++ == 0 && i++ == 2)
            {
```

```
                System.out.println("if block");
                i++;
            }
            else
            {
                System.out.println("else-block");
                i = i + 10;
            }
            System.out.println("main end:" + i );
        }
}
```

Output:

```
main begin
else-block
main end:12
```

```
class O
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i = 0;
        if(i++ == 1 && i++ == 2)
        {
```

```
                System.out.println("if block");
                i++;
            }
            else
            {
                System.out.println("else-block");
                i = i + 10;
            }
            System.out.println("main end:" + i );
        }
}
```

Output:

```
main begin
else-block
main end:11
```

```
class P
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i = 0;
        if(i++ == 1 || i++ == 2)
        {
            System.out.println("if block");
```

```
                i++;
            }
            else
            {
                System.out.println("else-block");
                i = i + 10;
            }
            System.out.println("main end:" + i );
        }
}
```

Output:

```
main begin
else-block
main end:12
```

```
class Q
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i = 0;
        if(i++ == 0 || i++ == 2)
        {
            System.out.println("if block");
            i++;
```

```
            }
            else
            {
                  System.out.println("else-block");
                  i = i + 10;
            }
            System.out.println("main end:" + i );
      }
}
```

Output:

```
main begin
if block
main end:2
```

---

app13:

```
class A
{
      public static void main(String[] args)
      {
            System.out.println("main begin");
            if(true)
            {
                  System.out.println("if1 begin");
                  if(true)
                  {
```

```
                    System.out.println("if2");
                }
                else
                {
                    System.out.println("else for if2");
                }
                System.out.println("if1 end");
            }
            else
            {
                System.out.println("else for if1");
            }
            System.out.println("main end");
        }
}
Output:
main begin
if1 begin
if2
if1 end
main end
```

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

```
    {
        System.out.println("main begin");
        if(true)
        {
            System.out.println("if1 begin");
            if(false)
            {
                System.out.println("if2");
            }
            else
            {
                System.out.println("else for if2");
            }
            System.out.println("if1 end");
        }
        else
        {
            System.out.println("else for if1");
        }
        System.out.println("main end");
    }
}
```

Output:

```
main begin
```

```
if1 begin
else for if2
if1 end
main end
```

```
class C
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if1 begin");
			if(true)
			{
				System.out.println("if2");
			}
			else
			{
				System.out.println("else for if2");
			}
			System.out.println("if1 end");
		}
		else
		{
```

```
                System.out.println("else for if1");
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
else for if1
main end
```

```
class D
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(false)
        {
            System.out.println("if1 begin");
            if(true)
            {
                System.out.println("if2");
            }
            else
            {
                System.out.println("else for if2");
```

```
                }
                System.out.println("if1 end");
            }
            else
            {
                System.out.println("else for if1");
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
else for if1
main end
```

```
class E
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(true)
        {
            System.out.println("if1 begin");
            if(true)
                System.out.println("if2");
```

```
                else
                        System.out.println("else for if2");
                System.out.println("if1 end");
        }
        else
                System.out.println("else for if1");

        System.out.println("main end");
    }
}
```

Output:

```
main begin
if1 begin
if2
if1 end
main end
```

```
class F
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(true)
        {
```

```
                if(true)
                        System.out.println("if2");
                else
                        System.out.println("else for if2");

        }
        else
                System.out.println("else for if1");

        System.out.println("main end");
    }
}
```

Output:

```
main begin
if2
main end
```

```
class G
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(true)
            if(true)
                System.out.println("if2");
```

```
                else
                        System.out.println("else for if2");
                else
                        System.out.println("else for if1");

                System.out.println("main end");
        }
}
```

Output:

```
main begin
if2
main end
```

```
class H
{
        public static void main(String[] args)
        {
                System.out.println("main begin");
                if(true)
                if(true)
                System.out.println("if2");
                else
                System.out.println("else for if2");
                else
                System.out.println("else for if1");
```

```
            System.out.println("main end");
        }
}
```

Output:

```
main begin
if2
main end
```

```
class I
{
        public static void main(String[] args)
        {
                System.out.println("main begin");
                if(false)
                if(true)
                System.out.println("if2");
                else
                System.out.println("else for if2");
                else
                System.out.println("else for if1");

                System.out.println("main end");
        }
}
```

Output:

main begin

else for if1

main end

```
class J
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true)
		if(false)
		System.out.println("if2");
		else
		System.out.println("else for if2");
		else
		System.out.println("else for if1");

		System.out.println("main end");
	}
}
```

Output:

main begin

else for if2

main end

---

app14:

```
class A
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else
		{
			System.out.println("else begin");
			if(true)
			{
				System.out.println("if inside an else");
			}
			System.out.println("else end");
		}
		System.out.println("main end");
	}
}
```

Output:

```
main begin
```

```
else begin
if inside an else
else end
main end
```

```
class B
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else
		{
			System.out.println("else begin");
			if(false)
			{
				System.out.println("if inside an else");
			}
			System.out.println("else end");
		}
		System.out.println("main end");
	}
```

```
}
```

Output:

```
main begin
else begin
else end
main end
```

```
class C
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else
		{
			if(true)
			{
				System.out.println("if inside an else");
			}
		}
		System.out.println("main end");
	}
```

```
}
```

Output:

```
main begin
if inside an else
main end
```

```
class D
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else if(true)
		{
			System.out.println("if inside an else");
		}

		System.out.println("main end");
	}
}
```

Output:

```
main begin
```

```
if inside an else
main end
```

```
class E
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else
		{
			System.out.println("else begin");
			if(true)
			{
				System.out.println("if inside an else");
			}
			else
			{
				System.out.println("else for an if inside an
else");
			}
			System.out.println("else end");
```

```
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
else begin
if inside an else
else end
main end
```

```
class F
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(false)
        {
            System.out.println("if");
        }
        else
        {
            System.out.println("else begin");
            if(false)
            {
```

```
                    System.out.println("if inside an else");
                }
                else
                {
                    System.out.println("else for an if inside an
else");
                }
                System.out.println("else end");
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
else begin
else for an if inside an else
else end
main end
```

```
class G
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(false)
```

```
		{
			System.out.println("if");
		}
		else
		{
			if(false)
			{
				System.out.println("if inside an else");
			}
			else
			{
				System.out.println("else for an if inside an
else");
			}
		}
		System.out.println("main end");
	}
}
```

Output:

```
main begin
else for an if inside an else
main end
```

```
class H
{
```

```
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else if(false)
		{
			System.out.println("if inside an else");
		}
		else
		{
			System.out.println("else for an if inside an
else");
		}

		System.out.println("main end");
	}
}
```

Output:

```
main begin
else for an if inside an else
main end
```

```
class I
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true)
		{
			System.out.println("if");
		}
		else if(false)
		{
			System.out.println("if inside an else");
		}
		else
		{
			System.out.println("else for an if inside an
else");
		}

		System.out.println("main end");
	}
}
```

Output:

```
main begin
```

```
if
main end
```

```
class J
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true)
		{
			System.out.println("if");
		}
		else if(true)
		{
			System.out.println("if inside an else");
		}
		else
		{
			System.out.println("else for an if inside an
else");
		}

		System.out.println("main end");
	}
}
```

Output:

```
main begin
if
main end
```

```
class K
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else if(true)
		{
			System.out.println("if inside an else");
		}
		else
		{
			System.out.println("else for an if inside an
else");
		}

		System.out.println("main end");
```

```
	}
}
```

Output:

```
main begin
if inside an else
main end
```

```
class L
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else
		{
			System.out.println("else begin");
			if(false)
			{
				System.out.println("if inside an else");
			}
			else
			{
```

```
                    System.out.println("else for an if inside an
else begin");
                    if(true)
                    {
                        System.out.println("innermost if");
                    }
                    System.out.println("else for an if inside an
else end");
                }
                System.out.println("else end");
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
else begin
else for an if inside an else begin
innermost if
else for an if inside an else end
else end
main end
```

```
class M
{
```

```
public static void main(String[] args)
{
	System.out.println("main begin");
	if(false)
	{
		System.out.println("if");
	}
	else
	{

		if(false)
		{
			System.out.println("if inside an else");
		}
		else
		{
			System.out.println("else for an if inside an
else begin");
			if(true)
			{
				System.out.println("innermost if");
			}
			System.out.println("else for an if inside an
else end");
```

```
                }

            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
else for an if inside an else begin
innermost if
else for an if inside an else end
main end
```

```
class N
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(false)
        {
            System.out.println("if");
        }
        else if(false)
        {
            System.out.println("if inside an else");
```

```
            }
            else
            {
                  System.out.println("else for an if inside an else
begin");
                  if(true)
                  {
                        System.out.println("innermost if");
                  }
                  System.out.println("else for an if inside an else
end");
            }

            System.out.println("main end");
      }
}
```

Output:

```
main begin
else for an if inside an else begin
innermost if
else for an if inside an else end
main end
```

```
class O
{
```

```
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else if(false)
		{
			System.out.println("if inside an else");
		}
		else
		{
			if(true)
			{
				System.out.println("innermost if");
			}
		}
		System.out.println("main end");
	}
}
```

Output:

```
main begin
innermost if
```

main end

```
class P
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else if(false)
		{
			System.out.println("if inside an else");
		}
		else if(true)
		{
			System.out.println("innermost if");
		}
		System.out.println("main end");
	}
}
```

Output:

```
main begin
innermost if
```

main end

```
class Q
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(true)
		{
			System.out.println("if");
		}
		else if(true)
		{
			System.out.println("if inside an else");
		}
		else if(true)
		{
			System.out.println("innermost if");
		}

		System.out.println("main end");
	}
}
```

Output:

main begin

if
main end

```
class R
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else if(true)
		{
			System.out.println("if inside an else");
		}
		else if(true)
		{
			System.out.println("innermost if");
		}
		System.out.println("main end");
	}
}
```

Output:

main begin

if inside an else
main end

```
class S
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else if(false)
		{
			System.out.println("if inside an else");
		}
		else if(true)
		{
			System.out.println("innermost if");
		}
		System.out.println("main end");
	}
}
```

Output:

main begin

```
innermost if
main end
```

```
class T
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else if(false)
		{
			System.out.println("if inside an else");
		}
		else if(false)
		{
			System.out.println("innermost if");
		}
		System.out.println("main end");
	}
}
Output:
main begin
```

```
main end
```

```
class U
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else
		{

			if(false)
			{
				System.out.println("if inside an else");
			}
			else
			{
				System.out.println("else for an if inside an
else begin");
				if(true)
				{
					System.out.println("innermost if");
```

```
                        }
                        else
                        {
                                System.out.println("innermost else");
                        }
                        System.out.println("else for an if inside an
else end");
                }

        }
        System.out.println("main end");
    }
}
```

Output:

```
main begin
else for an if inside an else begin
innermost if
else for an if inside an else end
main end
```

```
class V
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
```

```
if(false)
{
	System.out.println("if");
}
else
{

	if(false)
	{
		System.out.println("if inside an else");
	}
	else
	{
		if(true)
		{
			System.out.println("innermost if");
		}
		else
		{
			System.out.println("innermost else");
		}
	}

}
```

```
            System.out.println("main end");
        }
}
Output:
main begin
innermost if
main end
```

```
class W
{
        public static void main(String[] args)
        {
                System.out.println("main begin");
                if(false)
                {
                        System.out.println("if");
                }
                else
                {
                        if(false)
                        {
                                System.out.println("if inside an else");
                        }
                        else if(true)
                        {
```

```
                    System.out.println("innermost if");
                }
                else
                {
                    System.out.println("innermost else");
                }
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
innermost if
main end
```

```
class X
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        if(false)
        {
            System.out.println("if");
        }
        else if(false)
```

```
            {
                  System.out.println("if inside an else");
            }
            else if(true)
            {
                  System.out.println("innermost if");
            }
            else
            {
                  System.out.println("innermost else");
            }
            System.out.println("main end");
      }
}
```

Output:

```
main begin
innermost if
main end
```

```
class Y
{
      public static void main(String[] args)
      {
            System.out.println("main begin");
            if(true)
```

```
            {
                System.out.println("if");
            }
            else if(true)
            {
                System.out.println("if inside an else");
            }
            else if(true)
            {
                System.out.println("innermost if");
            }
            else
            {
                System.out.println("innermost else");
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
if
main end
```

```
class Z
{
```

```
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else if(true)
		{
			System.out.println("if inside an else");
		}
		else if(true)
		{
			System.out.println("innermost if");
		}
		else
		{
			System.out.println("innermost else");
		}
		System.out.println("main end");
	}
}
```

Output:

```
main begin
```

```
if inside an else
main end
```

```
class Z1
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else if(false)
		{
			System.out.println("if inside an else");
		}
		else if(true)
		{
			System.out.println("innermost if");
		}
		else
		{
			System.out.println("innermost else");
		}
		System.out.println("main end");
```

```
	}
}
Output:
main begin
innermost if
main end
```

```
class Z2
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(false)
		{
			System.out.println("if");
		}
		else if(false)
		{
			System.out.println("if inside an else");
		}
		else if(false)
		{
			System.out.println("innermost if");
		}
		else
```

```
            {
                  System.out.println("innermost else");
            }
            System.out.println("main end");
      }
}
```

Output:

main begin

innermost else

main end

---

app15:

```
class A
{
      public static void main(String[] args)
      {
            System.out.println(Byte.MIN_VALUE); //wrapper
            System.out.println(Byte.MAX_VALUE);
            System.out.println(Short.MIN_VALUE);
            System.out.println(Short.MAX_VALUE);
            System.out.println(Integer.MIN_VALUE);
            System.out.println(Integer.MAX_VALUE);
            System.out.println((int)Character.MIN_VALUE);
            System.out.println((int)Character.MAX_VALUE);
```

```
	}
}
```

Output:

```
-128
127
-32768
32767
-2147483648
2147483647
0
65535
```

```
class B
{
	enum Gender {MALE, FEMALE}

	public static void main(String[] args)
	{
		System.out.println(Gender.MALE.ordinal());
		System.out.println(Gender.FEMALE.ordinal());
	}
}
```

Output:

```
0
1
```

```
class C
{
	public static void main(String[] args)
	{
		String s1 = "";
		String s2 = "abc xyz hello test dffjdfjfjfjf
sdfjgsldhgspdihgsgsdgsd;fgjsdfiogjspdfgspofgsdfogs;dfghs;d
ohg";
		System.out.println(s1.hashCode());
		System.out.println(s2.hashCode());
	}
}
```

Output:

0

580421408

```
class D
{
	public static void main(String[] args)
	{
		System.out.println(Integer.MIN_VALUE);
		System.out.println(Integer.MAX_VALUE);
		System.out.println(Long.MIN_VALUE);
		System.out.println(Long.MAX_VALUE);
		System.out.println(Float.MIN_VALUE);
```

```
            System.out.println(Float.MAX_VALUE);
            System.out.println(Double.MIN_VALUE);
            System.out.println(Double.MAX_VALUE);
      }
}
```

Output:

```
-2147483648
2147483647
-9223372036854775808
9223372036854775807
1.4E-45
3.4028235E38
4.9E-324
1.79769313486231570E308
```

```
class E
{
      public static void main(String[] args)
      {
            System.out.println("main begin");
            int i = 10;
            switch( i )
            {
                  case 1:
                        System.out.println("from case1");
```

```
                case 3:
                        System.out.println("from case3");
                        System.out.println("from case3");
                case 7:
                {
                        System.out.println("from case7");
                }
                case 10:
                        System.out.println("from case10");
        }
        System.out.println("main end");
    }
}
```

Output:

```
main begin
from case10
main end
```

```
class F
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i = 7;
        switch( i )
```

```
            {
                  case 1:
                        System.out.println("from case1");
                  case 3:
                        System.out.println("from case3");
                        System.out.println("from case3");
                  case 7:
                  {
                        System.out.println("from case7");
                  }
                  case 10:
                        System.out.println("from case10");
            }
            System.out.println("main end");
      }
}
```

Output:

```
main begin
from case7
from case10
main end
```

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

```
    {
        System.out.println("main begin");
        int i = 3;
        switch( i )
        {
            case 1:
                System.out.println("from case1");
            case 3:
                System.out.println("from case3");
                System.out.println("from case3");
            case 7:
            {
                System.out.println("from case7");
            }
            case 10:
                System.out.println("from case10");
        }
        System.out.println("main end");
    }
}
```

Output:

```
main begin
from case3
from case3
```

```
from case7
from case10
main end
```

```
class H
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		int i = 1;
		switch( i )
		{
			case 1:
				System.out.println("from case1");
			case 3:
				System.out.println("from case3");
				System.out.println("from case3");
			case 7:
			{
				System.out.println("from case7");
				break;
			}
			case 10:
				System.out.println("from case10");
		}
```

```
            System.out.println("main end");
        }
}
Output:
main begin
from case1
from case3
from case3
from case7
main end
```

```
class I
{
        public static void main(String[] args)
        {
                System.out.println("main begin");
                int i = 1;
                switch( i )
                {
                        case 1:
                                System.out.println("from case1");
                                break;
                        case 3:
                                System.out.println("from case3");
                                System.out.println("from case3");
```

```
                    break;
                case 7:
                {
                    System.out.println("from case7");
                    break;
                }
                case 10:
                    System.out.println("from case10");
                    break;
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
from case1
main end
```

```
class J
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i = 20;
        switch( i )
```

```
        {
            case 1:
                System.out.println("from case1");
                break;
            case 3:
                System.out.println("from case3");
                System.out.println("from case3");
                break;
            case 7:
            {
                System.out.println("from case7");
                break;
            }
            case 10:
                System.out.println("from case10");
                break;
        }
        System.out.println("main end");
    }
}
```

Output:

main begin

main end

---

class K

```
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		int i = 20;
		switch( i )
		{
			case 1:
				System.out.println("from case1");
				break;
			case 3:
				System.out.println("from case3");
				break;
				System.out.println("from case3");

			case 7:
			{
				System.out.println("from case7");
			}
			case 10:
				System.out.println("from case10");
				break;
			default:
				System.out.println("from default");
```

```
            }
            System.out.println("main end");
      }
}

/*
      break
      continue
      return
      throw
*/
Output:
K.java:15: error: unreachable statement
                        System.out.println("from case3");
                        ^
```

```
class L
{
      public static void main(String[] args)
      {
            System.out.println("main begin");
            if(args.length < 1)
            {
                  System.out.println("pls enter one command line
arg");
```

```
        return;
}
int i = Integer.parseInt(args[0]);
switch( i )
{
        case 1:
                System.out.println("from case1");
                break;
        case 3:
                System.out.println("from case3");

                System.out.println("from case3");
                break;

        case 7:
        {
                System.out.println("from case7");
        }
        case 10:
                System.out.println("from case10");
                break;
        default:
                System.out.println("from default");
}
```

```
            System.out.println("main end");
        }
}

/*
        break
        continue
        return
        throw
*/
Output:
main begin
pls enter one command line arg
```

```
class N
{
        public static void main(String[] args)
        {
                System.out.println("main begin");
                if(args.length < 1)
                {
                        System.out.println("pls enter one command line
arg");
                        return;
                }
```

```
int i = Integer.parseInt(args[0]);
switch( i )
{
	case 1:
		System.out.println("from case1");
		break;

	case 3:
		System.out.println("from case3");

		System.out.println("from case3");
		break;

	default:
		System.out.println("from default");
		break;

	case 7:
	{
		System.out.println("from case7");
	}
	case 10:
		System.out.println("from case10");
		break;
```

```
            }
            System.out.println("main end");
        }
}

/*
        break
        continue
        return
        throw
*/
Output:
main begin
pls enter one command line arg
```

```
class O
{
        public static void main(String[] args)
        {
                System.out.println("main begin");
                if(args.length < 1)
                {
                        System.out.println("pls enter one command line
arg");
                        return;
```

```
}
int i = Integer.parseInt(args[0]);
switch( i )
{
	case 1:
		System.out.println("from case1");
		break;

	case 3:
		System.out.println("from case3");

		System.out.println("from case3");
		break;

	default:
		System.out.println("from default");
		break;

	case 7:
	{
		System.out.println("from case7");
	}
	case 10:
		System.out.println("from case10");
```

```
                    break;
                default:
                    System.out.println("from default");
                    System.out.println("from default");
                    System.out.println("from default");
            }
            System.out.println("main end");
        }
}

/*
        break
        continue
        return
        throw
*/
Output:
O.java:34: error: duplicate default label
                    default:
                    ^
```

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

```
		System.out.println("main begin");
		if(args.length < 1)
		{
			System.out.println("pls enter one command line
arg");
			return;
		}
		int i = Integer.parseInt(args[0]);
		switch( i )
		{
			case 1:
			case 3:
			case 5:
			case 7:
			case 9:
				System.out.println(i + " is odd value");
				break;
			case 2:
			case 4:
			case 6:
			case 8:
			case 10:
				System.out.println(i + " is even value");
				break;
```

```
                default:
                        System.out.println("pls supply command
line arg only between 1 to 10");
            }
            System.out.println("main end");
        }
}

/*
        break
        continue
        return
        throw
*/
Output:
main begin
pls enter one command line arg
```

```
class Q
{
        public static void main(String[] args)
        {
                System.out.println("main begin");
                byte i = 100;
                switch(i)
```

```
        {
            case 10:
                System.out.println("from case 10");
                break;

            case 50:
                System.out.println("from case 50");
                break;

            case 100:
                System.out.println("from case 100");
                break;
        }
        System.out.println("main end");
    }
}
```

Output:

```
main begin
from case 100
main end
```

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

```
            System.out.println("main begin");
            byte i = 100;
            switch(i)
            {
                  case 10:
                        System.out.println("from case 10");
                        break;

                  case 50:
                        System.out.println("from case 50");
                        break;

                  case 150:
                        System.out.println("from case 150");
                        break;
            }
            System.out.println("main end");
      }
}
```

Output:

```
R.java:17: error: incompatible types: possible lossy conversion
from int to byte
                  case 150:
                       ^
```

```
class S
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		short i = 100;
		switch(i)
		{
			case 10:
				System.out.println("from case 10");
				break;

			case 50:
				System.out.println("from case 50");
				break;

			case 150:
				System.out.println("from case 150");
				break;
		}
		System.out.println("main end");
	}
}
```

Output:

```
main begin
main end
```

```
class T
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		short i = 100;
		switch(i)
		{
			case 10:
				System.out.println("from case 10");
				break;

			case 50:
				System.out.println("from case 50");
				break;

			case 35000:
				System.out.println("from case 35000");
				break;
		}
		System.out.println("main end");
	}
```

```
}
Output:
T.java:17: error: incompatible types: possible lossy conversion
from int to short
                    case 35000:
                         ^
```

```
class U
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		char c1 = 'p';
		switch(c1)
		{
			case 'a':
				System.out.println("from case a");
				break;

			case 'b':
				System.out.println("from case b");
				break;

			case 'p':
				System.out.println("from case p");
```

```
                    break;
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
from case p
main end
```

```
class V
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        char c1 = 'p';
        switch(c1)
        {
            case 'a':
                System.out.println("from case a");
                break;

            case 'b':
                System.out.println("from case b");
                break;
```

```
                case 66000:
                        System.out.println("from case 66000");
                        break;
                }
                System.out.println("main end");
        }
}
```

Output:

```
V.java:17: error: incompatible types: possible lossy conversion
from int to char
                case 66000:
                     ^
```

```
class W
{
        public static void main(String[] args)
        {
                System.out.println("main begin");
                String s1 = "hello";
                switch(s1)
                {
                        case "abc":
                                System.out.println("from case abc");
                                break;
```

```
                case "test":
                        System.out.println("from case test");
                        break;

                case "hello":
                        System.out.println("from case hello");
                        break;
            }
            System.out.println("main end");
        }
}
```

Output:

```
main begin
from case hello
main end
```

```
class X
{
        enum WeekDay {MON, TUE, WED, THR, FRI, SAT, SUN}
        public static void main(String[] args)
        {
                System.out.println("main begin");
                WeekDay day = WeekDay.THR;
                switch(day)
```

```
        {
            case MON:
                System.out.println("from case MON");
                break;

            case THR:
                System.out.println("from case THR");
                break;

            case SAT:
                System.out.println("from case SAT");
                break;
        }
        System.out.println("main end");
    }
}
```

Output:

```
main begin
from case THR
main end
```

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

```
            System.out.println("main begin");
            int i = 10;
            int j = 10;
            switch(i)
            {
                  case 1:
                        System.out.println("case 1");
                  case j:
                        System.out.println("case 10");
            }
            System.out.println("main end");
            System.out.println("main end");
      }
}
```

Output:

```
Y.java:12: error: constant expression required
                  case j:
                       ^
```

```
class Z
{
      public static void main(String[] args)
      {
            System.out.println("main begin");
            int i = 10;
```

```
        int j = 10;
        switch(i)
        {
            case 1:
                System.out.println("case 1");
            case j:
                System.out.println("case 10");
        }
        System.out.println("main end");
        System.out.println("main end");
    }
}
```

Output:

```
Z.java:12: error: constant expression required
                case j:
                     ^
```

```
class Z1
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i = 10;
        final int j;
        j = 10;
```

```
            switch(i)
            {
                  case 1:
                        System.out.println("case 1");
                  case j:
                        System.out.println("case 10");
            }
            System.out.println("main end");
            System.out.println("main end");
      }
}
```

Output:

```
Z1.java:13: error: constant expression required
                  case j:
                      ^
```

---

app16:

```
class A
{
      public static void main(String[] args)
      {
            System.out.println("main begin");
            int i;
            if(true)
            {
```

```
                i = 10;
            }
            else
            {
                i = 20;
            }
            System.out.println("i value:" + i);
            System.out.println("main end");
        }
}
```

Output:

```
main begin
i value:10
main end
```

```
class B
{
    public static void main(String[] args)
    {
        System.out.println("main begin");
        int i;
        if(false)
        {
            i = 10;
        }
```

```
            else
            {
                  i = 20;
            }
            System.out.println("i value:" + i);
            System.out.println("main end");
      }
}
```

Output:

```
main begin
i value:20
main end
```

```
class C
{
      public static void main(String[] args)
      {
            System.out.println("main begin");
            int i = true ? 10 : 20;
            System.out.println("i value:" + i);
            System.out.println("main end");
      }
}
```

Output:

```
main begin
```

```
i value:10
main  end
```

```
class D
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		int i = false ? 10 : 20;
		System.out.println("i value:" + i);
		System.out.println("main end");
	}
}
Output:
main begin
i value:20
main end
```

```
class E
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(args.length < 1)
		{
```

```
                System.out.println("pls supply one int command
line arg");
                return;
            }
            int age = Integer.parseInt(args[0]);
            String msg = age < 19 ? "child" : "adult";
            System.out.println("Your age is : " + age + " and you
are : " + msg);
            System.out.println("main end");
        }
}
```

Output:

```
main begin
pls supply one int command line arg
```

```
class F
{
        public static void main(String[] args)
        {
            System.out.println("main begin");
            if(args.length < 2)
            {
                System.out.println("pls supply two int command
line arg");
                return;
```

```
            }
            int i = Integer.parseInt(args[0]);
            int j = Integer.parseInt(args[1]);
            int min = i < j ? i : j;
            System.out.println("min value between " + i + " and "
+ j + " is " + min);
            System.out.println("main end");
      }
}
```

Output:

```
main begin
pls supply two int command line arg
```

```
class G
{
      public static void main(String[] args)
      {
            System.out.println("main begin");
            if(args.length < 3)
            {
                  System.out.println("pls supply three int
command line args");
                  return;
            }
            int i = Integer.parseInt(args[0]);
```

```
            int j = Integer.parseInt(args[1]);
            int k = Integer.parseInt(args[2]);
            int min;
            if(i < j && i < k)
            {
                  min = i;
            }
            else if(j < i && j < k)
            {
                  min = j;
            }
            else
            {
                  min = k;
            }
            System.out.println("min value among " + i + ", " + j + "
and " + k + " is " + min);
            System.out.println("main end");
      }
}
```

Output:

```
main begin
pls supply three int command line args
```

---

class H

```
{
	public static void main(String[] args)
	{
		System.out.println("main begin");
		if(args.length < 3)
		{
			System.out.println("pls supply three int
command line args");
			return;
		}
		int i = Integer.parseInt(args[0]);
		int j = Integer.parseInt(args[1]);
		int k = Integer.parseInt(args[2]);
		int min = i < j ? (i < k ? i : k) : (j < k ? j : k);
		System.out.println("min value among " + i + ", " + j + "
and " + k + " is " + min);
		System.out.println("main end");
	}
}
```

Output:

```
main begin
pls supply three int command line args
```

```
class K
{
```

```
public static void main(String[] args)
{
	System.out.println("main begin");
	if(args.length < 3)
	{
		System.out.println("pls supply three int
command line args");
		return;
	}
	int i = Integer.parseInt(args[0]);
	int j = Integer.parseInt(args[1]);
	int k = Integer.parseInt(args[2]);
	int min;
	if(i < j && i < k)
	{
		min = i;
	}
	else if(j < i && j < k)
	{
		min = j;
	}
	else
	{
		min = k;
```

```
            }
            System.out.println("min value among " + i + ", " + j + "
and " + k + " is " + min);
            System.out.println("main end");
        }
}
```

Output:

```
main begin
pls supply three int command line args
```