**Snippet 1:**

public class NestedLoopOutput {

public static void main(String[] args) {

for (int i = 1; i <= 3; i++) {

for (int j = 1; j <= 2; j++) {

System.out.print(i + " " + j + " ");

}

System.out.println();

}

}

}

**// Guess the output of this nested loop.**

Iteration 1: i = 1

j = 1 → print(1 1 )

j = 2 → print(1 2 )

println() → Moves to the next line

Iteration 2: i = 2

j = 1 → print(2 1 )

j = 2 → print(2 2 )

println() → Moves to the next line

Iteration 3: i = 3

j = 1 → print(3 1 )

j = 2 → print(3 2 )

println() → Moves to the next line

Output:-

1 1 1 2

2 1 2 2

3 1 3 2

**Snippet 2:**

public class DecrementingLoop {

public static void main(String[] args) {

int total = 0;

for (int i = 5; i > 0; i--) {

total += i;

if (i == 3) continue;

total -= 1;

}

System.out.println(total);

}

}

**// Guess the output of this loop.**

Start: total = 0

Iteration 1 (i = 5)

total += 5 → total = 5

total -= 1 → total = 4

Iteration 2 (i = 4)

total += 4 → total = 8

total -= 1 → total = 7

Iteration 3 (i = 3)

total += 3 → total = 10

continue skips total -= 1

Iteration 4 (i = 2)

total += 2 → total = 12

total -= 1 → total = 11

Iteration 5 (i = 1)

total += 1 → total = 12

total -= 1 → total = 11

Loop ends, print total → Output: 11

Output:- 11

**Snippet 3:**

public class WhileLoopBreak {

public static void main(String[] args) {

int count = 0;

while (count < 5) {

System.out.print(count + " ");

count++;

if (count == 3) break;

}

System.out.println(count);

}

}

**// Guess the output of this while loop.**

Dry run:-

Start: count = 0

Iteration 1 (count = 0)

Print 0

Increment count → 1

Condition (count == 3)? No → Continue

Iteration 2 (count = 1)

Print 1

Increment count → 2

Condition (count == 3)? No → Continue

Iteration 3 (count = 2)

Print 2

Increment count → 3

Condition (count == 3)? Yes → Break loop

Print final count → 3

Output:- 0 1 2 3

**Snippet 4:**

public class DoWhileLoop {

public static void main(String[] args) {

int i = 1;

do {

System.out.print(i + " ");

i++;

} while (i < 5);

System.out.println(i);

}

}

**// Guess the output of this do-while loop.**

i = 1

Iteration 1: Print 1, increment i → 2

Iteration 2: Print 2, increment i → 3

Iteration 3: Print 3, increment i → 4

Iteration 4: Print 4, increment i → 5

Condition i < 5 is false, exit loop

Print final i = 5

Output:- 1 2 3 4 5

**Snippet 5:**

public class ConditionalLoopOutput {

public static void main(String[] args) {

int num = 1;

for (int i = 1; i <= 4; i++) {

if (i % 2 == 0) {

num += i;

} else {

num -= i;

}

}

System.out.println(num);

}

}

**// Guess the output of this loop.**

Dry run

num = 1

Iteration 1 (i = 1): 1 % 2 != 0 → num = num - 1 = 0

Iteration 2 (i = 2): 2 % 2 == 0 → num = num + 2 = 2

Iteration 3 (i = 3): 3 % 2 != 0 → num = num - 3 = -1

Iteration 4 (i = 4): 4 % 2 == 0 → num = num + 4 = 3

Output:- 3

**Snippet 6:**

public class IncrementDecrement {

public static void main(String[] args) {

int x = 5;

int y = ++x - x-- + --x + x++;

System.out.println(y);

}

}

**// Guess the output of this code snippet.**

Dry run

1. x = 5

2. ++x = 6 → 6 -

3. x-- = 6 → 6 - 6 = 0

4. --x = 4 → 0 + 4 = 4

5. x++ = 4 → 4 + 4 = 8

Output:- 8

**Snippet 7:**

public class NestedIncrement {

public static void main(String[] args) {

int a = 10;

int b = 5;

int result = ++a \* b-- - --a + b++;

System.out.println(result);

}

}

**// Guess the output of this code snippet.**

1. a = 10, b = 5

2. ++a = 11 → 11 \* 5 = 55

3. b-- = 5, now b = 4

4. --a = 10, 55 - 10 = 45

5. b++ = 4, b becomes 5 → result = 45 + 4 = 49

Output:- 49

**Snippet 8:**

public class LoopIncrement {

public static void main(String[] args) {

int count = 0;

for (int i = 0; i < 4; i++) {

count += i++ - ++i;

}

System.out.println(count);

}

}

**// Guess the output of this code snippet.**

count = 0, i = 0

Iteration 1 (i = 0):

i++ = 0, then i = 1

++i = 2 → 0 - 2 = -2

count = count + (-2) = -2, i = 2

Iteration 2 (i = 2):

i++ = 2, then i = 3

++i = 4 → 2 - 4 = -2

count = count + (-2) = -4, i = 4

Output :- -4