**Snippet 1:**

public class InfiniteForLoop {

public static void main(String[] args) {

for (int i = 0; i < 10; i--) {

System.out.println(i);

}

}

}

**Why does this loop run infinitely?**

ans=in that incremenation is not given properly thats why loop goes in infinite time.

**How should the loop control variable be adjusted?**

ans=in the for loop in code i-- given instead of that write i++.code will sucessfully.

**correct code:**

public class InfiniteForLoop {

public static void main(String[] args) {

for (int i = 0; i < 10; i++) {

System.out.println(i);

}

}

} //0 1 2 3 4 5 6 7 8 9

**Snippet 2:**

public class IncorrectWhileCondition {

public static void main(String[] args) {

int count = 5;

while (count = 0)//error

{

System.out.println(count);

count--;

}

}

}

**Error:**

incompatible types: int cannot be converted to boolean

while (count = 0) {

**Que:Why does the loop not execute as expected?**

ans=because in the while loop condition is not give properly in while count=0 int cannot be converted to boolean invalid because 0 is not a boolean in Java.

**Que:What is the issue with the condition in the while loop?**

ans=in the while loop int is not converted into boolean so in while give the condition while(count>=0) now code will run sucessfully.

**Correct code**

public class IncorrectWhileCondition {

public static void main(String[] args) {

int count = 5;

while (count >= 0)

{

System.out.println(count);

count--;

}

}

}//5 4 3 2 1 0

**//snnipt3**

public class DoWhileIncorrectCondition {

public static void main(String[] args) {

int num = 0;

do {

System.out.println(num);

num++;

} while (num > 0);

}

}

Why does the loop only execute once? What is wrong with the loop condition in the `dowhile` loop?

**Snnipt 4**

public class OffByOneErrorForLoop {

public static void main(String[] args) {

for (int i = 1; i <= 10; i++) {

System.out.println(i);

}

// Expected: 10 iterations with numbers 1 to 10

// Actual: Prints numbers 1 to 10, but the task expected only 1 to 9

}

**}**

**What is the issue with the loop boundaries?**

ans=Their is no issue in the program run sucessfully but we want 1 to 9 output.so we need change the condtion (i<10) then program give 1 to 9 output.

**How should the loop be adjusted to meet the expected output?**

ans=we need change the condtion of for loop (int i=1;i<10;i++)(remove the <=) we write this code execute 1 to 9.

**Correct code**

public class OffByOneErrorForLoop {

public static void main(String[] args) {

for (int i = 1; i < 10; i++)//remove <= from this

{

System.out.println(i);

}

// Expected: 10 iterations with numbers 1 to 10

// Actual: Prints numbers 1 to 10, but the task expected only 1 to 9

}

}

**//Snippet 5:**

public class WrongInitializationForLoop {

public static void main(String[] args) {

for (int i = 10; i >= 0; i++)//error

{

System.out.println(i);

}

}

}//goes in infinte loop

**Why does this loop not print numbers in the expected order?**

ans= beacuse incremention is give proper that's why error occur give i-- instaed of i++.

**What is the problem with the initialization and update statements in the `for` loop**

ans=no problem with initialization but we change the update statement write i-- instead of i++.

**Correct Code:**

public class WrongInitializationForLoop {

public static void main(String[] args) {

for (int i = 10; i >= 0; i--)

{

System.out.println(i);

}

}

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

**Snippet 6:**

public class MisplacedForLoopBody {

public static void main(String[] args) {

for (int i = 0; i < 5; i++)

System.out.println(i);

System.out.println("Done");

}

} //0 1 2 3 4 Done

**Why does "Done" print only once, outside the loop?**

ans=In Java, if a for loop does not use {} braces, only the first statement after it is considered inside the loop.suppose after for loop i give {

brace then second sop statement inside the loop that's why System.out.println("Done"); print only ones

**How should the loop body be enclosed to include all statements within the loop?**

ans=use the {} brace after for loop

**Correct Code:**

public class MisplacedForLoopBody {

public static void main(String[] args) {

for (int i = 0; i < 5; i++) {

System.out.println(i);

System.out.println("Done");

}

}

} //0 Done 1 Done 2 Done 3 Done 4 Done

**Snippet 7:**

public class UninitializedWhileLoop {

public static void main(String[] args) {

int count;

while (count < 10) {

System.out.println(count);

count++;

}

}

}

Que

**Why does this code produce a compilation error?**

ans=variable count might not have been initialized that's why compilation error.we must initialized value.

**What needs to be done to initialize the loop variable properly?**

ans=give the proper initializtion int count=10; like that.

**Correct code:**

public class UninitializedWhileLoop {

public static void main(String[] args) {

int count=1;

while (count < 10) {

System.out.println(count);

count++;

}

}

}

**Snippet 8:**

public class OffByOneDoWhileLoop {

public static void main(String[] args) {

int num = 1;

do {

System.out.println(num);

num--;

} while (num > 0);

}

}

**Why does this loop print unexpected numbers?**

ans= do-while loop prints only 1 because:

The loop starts with num = 1.

It prints 1.Then, num-- decrements num to 0.The condition while (num > 0) fails, so the loop terminates.

**What adjustments are needed to print the numbers from 1 to 5?**

ans=we need give :

1.give incremention i++ instead of i-- correctly.

2.in while give proper condtion (num<=5)

we want print 1 to 5.

**correct code:**

public class OffByOneDoWhileLoop {

public static void main(String[] args) {

int num = 1;

do {

System.out.println(num);

num++;

} while (num <= 5);

}

}

**//Snnpit 9**

public class InfiniteForLoopUpdate {

public static void main(String[] args) {

for (int i = 0; i < 5; i += 2) {

System.out.println(i);

}

}

**}**

**Why does the loop print unexpected results or run infinitely?**

ans=it will print 0 2 4 because:

1.first i=0 then 0<5 is correct i+=2=i+2=0+2=2 value of i become 2

2.again i=2 then 2<5 is correct i+2=2+2=4 value of i become 4

3.now value of i=4 then 4<5 is correct but i+2=4+2 now value is 6 is not correct loop get terminated.

**How should the loop update expression be corrected?**

ans=yes is corrected it print 0 2 4

**Snippet 10:**

public class IncorrectWhileLoopControl {

public static void main(String[] args) {

int num = 10;

while (num = 10) {

System.out.println(num);

num--;

}

}

**}**

**Why does the loop execute indefinitely?**

ans=: incompatible types: int cannot be converted to boolean

while (num = 10) in that condition given incorrectly their is an incompatiable type error.

**What is wrong with the loop condition?**

ans=i that code

1.initialization is not given properly we need give i=1

2.in while condtion while(num<=10)

3.give num++ instead of i--

**correct code:**

public class IncorrectWhileLoopControl {

public static void main(String[] args) {

int num = 1;

while (num <= 10) {

System.out.println(num);

num++;

}

}

} //1 2 3 4 5 6 7 8 9 10

**Snippet 11:**

public class IncorrectLoopUpdate {

public static void main(String[] args) {

int i = 0;

while (i < 5) {

System.out.println(i);

i += 2; // Error: This may cause unexpected results in output

}

}

**}**

**What will be the output of this loop?**

ans=There is no syntax error in this code, but the issue is with the loop update (i += 2;), which skips numbers and does not print sequential values from 0 to 4.

output of this is 0 2 4 it skip the 1 3 beacuse of i+=2 =i+2

**How should the loop variable be updated to achieve the**

desired result?

ans=so need to change the incremention i++ instead of i+=2

**Corrct code:**

public class IncorrectLoopUpdate {

public static void main(String[] args) {

int i = 0;

while (i < 5) {

System.out.println(i);

i++;

}

} //0 1 2 3 4

**Snippet 12:**

public class LoopVariableScope {

public static void main(String[] args) {

for (int i = 0; i < 5; i++) {

int x = i \* 2;

}

System.out.println(x); // Error: 'x' is not accessible here

}

}

**Why does the variable 'x' cause a compilation error?**

ans=cannot find symbol System.out.println(x);in the for loop we give i and we assigning x in that so it will not corrrct thats why showing symbol not found.

**How does scope?**

ans=we need to give x outside the loop.

**Correct code:**

public class LoopVariableScopeFixed {

public static void main(String[] args) {

int x = 0; // Declare x outside the loop

for (int i = 0; i < 5; i++) {

x = i \* 2;

}

System.out.println(x); //

}

^