

Q1.

```
1 public class Exercise1 {
2     public static void main(String[] args) {
3         int X = 52;
4         int Y;
5
6         if (X == 5) {
7             Y = 2;
8             X = 3;
9         } else {
10            X = 2;
11            Y = 3;
12        }
13        X = 4;
14
15        System.out.println("X = " + X);
16        System.out.println("Y = " + Y);
17    }
18 }
19
```

Run

C:\Users\corey\.jdk\openjdk-23.0.1\bin\java.exe -javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 20... performance

X = 4  
Y = 3

Process finished with exit code 0

Show Results 00:00

Process Terminated

Programme declares X = 52 and Y = 0  
Since X is not 5, first IF statement is always false,  
Else statement then declares X = 2 and Y = 3  
After this X = 4 is declared, Y = 3 remains the same  
Output is X=4, Y=3

Q2.

```
1 public class Exercise2 {
2     public static void main(String[] args) {
3         int X = 3;
4         int Y = 1;
5
6         if ((X == 3) && (Y == 2)) {
7             Y = 20;
8             X = 30;
9         } else {
10            X = 2;
11            Y = 3;
12        }
13
14        System.out.println("X = " + X);
15        System.out.println("Y = " + Y);
16    }
17 }
18
```

Run

C:\Users\corey\.jdk\openjdk-23.0.1\bin\java.exe -javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 20... Performance

X = 2  
Y = 3

Process finished with exit code 0

Show Results 00:00

Process Terminated

Programme starts with X = 3, Y = 1

First IF statement conditions are not met, so statement is false ( doesn't execute)

Else statement declares X = 2 and Y = 3

This is the final values

Q3.

The screenshot shows the IntelliJ IDEA IDE with a project named 'JavaExercises'. The 'src' directory contains files 'Exercise1', 'Exercise2', 'Exercise3', and 'Main'. The 'Exercise3.java' file is open, showing the following code:

```
1 public class Exercise3 {  
2     public static void main(String[] args) {  
3         int J = 0;  
4         int X = 0;  
5         for (int I = 7; I < 11; I++) {  
6             X = I * 10;  
7  
8             if (I > 8) {  
9                 for (int A = 1; A < 3; A++) {  
10                     J = J + 1;  
11                 }  
12             }  
13  
14             System.out.println("J = " + J);  
15             System.out.println("X = " + X);  
16         }  
17     }  
18 }  
19 }
```

The 'Run' tab at the bottom shows the execution output:

```
C:\Users\corey\.jdk\openjdk-23.0.1\bin\java.exe -javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 20: Performance  
J = 4  
X = 100  
Process finished with exit code 0
```

The status bar at the bottom indicates the file is 'Exercise3.java' in the 'src' directory, with a 'main' method. The status bar also shows '16:40 CRLF UTF-8 4 spaces'.

Programme initializes J and X as 0

First IF statement conditions are not met so statement is false

Values after first iteration X = 70, J = 0

Second iteration IF statement conditions are not met

Values after this iteration X = 80, J = 0

Third iteration IF statement conditions are met

ELSE block executes the inner loop

Values after this iteration

X = 90 J = 2

Fourth iteration IF statement conditions are met

Values after this iteration

X = 100 J = 4

Q4.

```
public class Exercise4 {  
    public static void main(String[] args) {  
        int X = 5;  
        int J = 3;  
  
        while (J < 7) {  
            X = X + 1;  
            J = J + 1;  
        }  
  
        System.out.println("X = " + X);  
        System.out.println("J = " + J);  
    }  
}
```

Run Exercise4

C:\Users\corey\.jdk\openjdk-23.0.1\bin\java.exe -javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 20... performance

X = 9  
J = 7

Process finished with exit code 0

Show Results 00:00

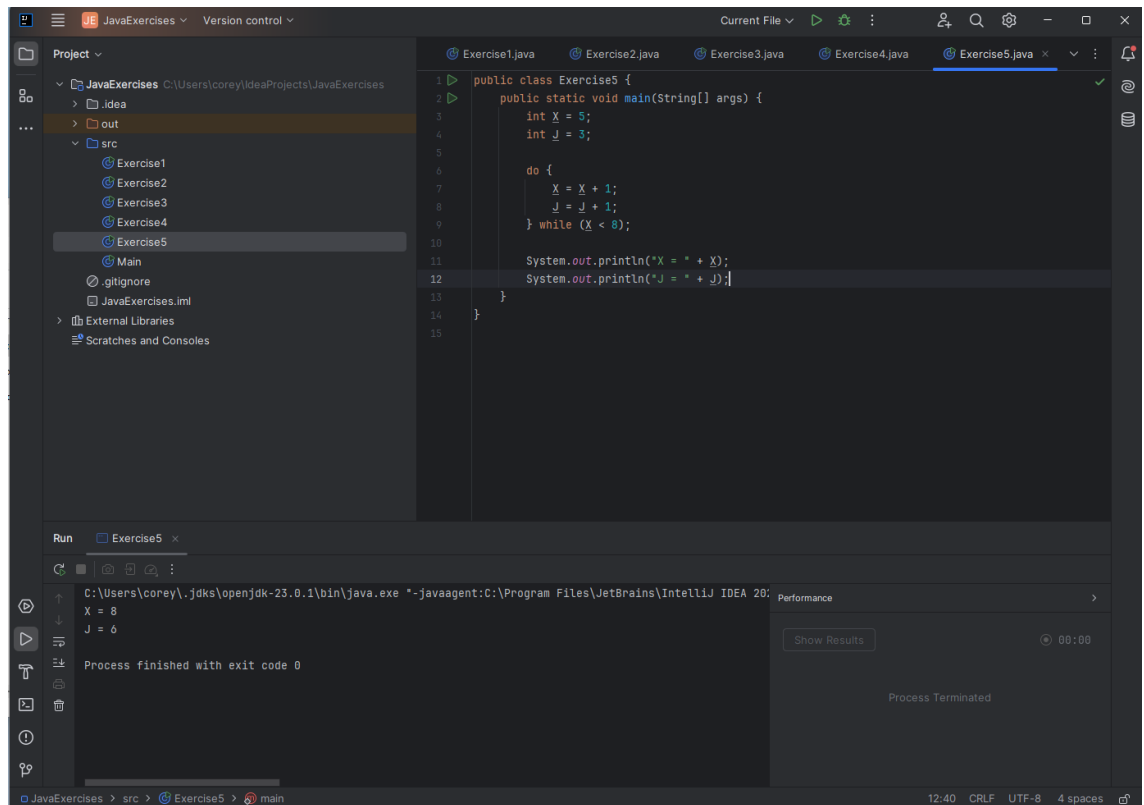
Process Terminated

Programme initializes  $X = 5$ ,  $J = 3$

While  $J$  is less than 7 (true)  $X = X + 1$  ( $X = 5 + 1$ ),  $J = J + 1$  ( $J = 3 + 1$ )

The loop continues until  $J$  becomes 7, at which point  $X = 9$ ,  $J = 7$

Q5.



Programme initializes  $X = 5$ ,  $J = 3$

DO loop executes until  $X = 8$

$X = X + 1$  ( $X = 5 + 1$ )       $J = J + 1$  ( $J = 3 + 1$ )

Final result  $X = 8$ ,  $J = 6$