Trace the output of the following programs

In the following tasks,
First, save->compile->run it in Dr. Java / Jeilot and
Then, trace the output of the code by hand
Try to matching each of your manual output with output shown in DrJava / Jeliot

```
1  public class Q1
2  {
3        public static void main(String[] args)
4        {
5              int x = 0, y =0;
6              int sum = 0;
7              while (x < 10){
8                    y = x - 3;
9                    y = 40;
10                   while (y > 22){
11                         if ((sum > 30) && (sum < 40))
12                               sum = sum + x * 2 ;
13                         else if ((sum > 40) && (sum < 50))
14                               sum = sum + x * 3;
15                         else
16                               sum = sum + 23;
17                         System.out.println(sum);
18                         y = y - 10;
19                   }
20                   x += 2;
21             }
22       }
23 }
```

```
1  public class Q2
2  {
3        public static void main(String[] args)
4        {
5              String test = "";
6              int i  = 0, j = 0, k = 15;
7              while (i< 5){
8                    test = "-->";
9                    j = --k;
10                   while (j > 10 ){
11                         test = i + j + test + i + j;
12                         System.out.println(test);
13                         j--;
14                   }
15                   i++;
16             }
17       }
18 }
```

```
1  public class Q3{
2        public static void main(String[] args){
3              int x = 0, y =0;
4              int sum = 0;
5              while (x < 10){
6                    y = x - 3;
7                    while (y < 3){
8                          sum = (sum % 2) + x - y * 2 ;
9                          System.out.println(sum);
10                         y = y + 1;
11                   }
12                   if (x > 5){
13                         x++;
14                   }else{
15                         x += 2;
16                   }
17             }
18       }
19 }
```

```
1  public class Q4{
2        public static void main(String[] args){
3              int x = 0, i =0, sum = 0;
4              i = 1;
5              x = 2;
6              sum = 0;
7              while (i< 20){
8                    x = x + i;
9                    sum = sum + x + 1;
10                   System.out.println(sum);
11                   if (x > 5)
12                         i += 2;
13                   else
14                         i += 3;
15             }
16             sum = sum + i;
17             System.out.println(sum);
18       }
19 }
```

```
1  public class Q5{
2        public static void main(String[] args){
3              String test = "";
4              int i = 0, j = 0, k = 15;
5              test = "-->";
6              while (i< 5){
7                    j = --k;
8                    while (j > 10 ){
9                          test = i + j + "-->" + test;
10                         System.out.println(test);
11                         j--;
12                   }
13                   i++;
14             }
15       }
16 }
```

```
1  public class Q6{
2        public static void main(String[] args){
3              int x = 0, p =0, sum = 0;
4              p = 1;
5              x = 2;
6              double q;
7              sum = 0;
8              while (p < 10){
9                    q =  x + p-(sum+5/3)/3.0%2 ;
10                   sum = sum + (x++) + (int)q;
11                   System.out.println(sum);
12                   if (x > 5)
13                         p += 4/2;
14                   else
15                         p += 3%1;
16             }
17             sum = sum + p;
18             System.out.println(sum);
19       }
20 }
```

```
1  public class Q7{
2        public static void main(String[] args){
3              int test = 1;
4              int j = 0, k = 100;
5              while (k > 0){
6                    while (j < k ){
7                          test = k - j + 21;
8                          System.out.println(1 + test);
9                          j += 10;
10                   }
11                   k -= 10;
12             }
13       }
14 }
```

```
1  public class Q8{
2        public static void main(String[] args){
3              int test = 1;
4              int j = 0, k = 100;
5              while (k > 0){
6                    while (j < k ){
7                          test = k - j + 11;
8                          System.out.println(1 + test / 3 +"12");
9                          j+=10;
10                   }
11                   k-=10;
12             }
13       }
14 }
```

```
1  public class Q9{
2        public static void main(String[] args){
3              int x = 0;
4              int y = 0;
5              int sum = 0;
6              double p;
7              while(x <18){
8                    y = x / 2;
9                    while(y < x){
10                         p = (x + 15.0) /2;
11                         sum = (sum + 3) + x + y * 3 + (int)p;
12                         System.out.println(sum);
13                         y = y + 3;
14                   }
15                   x = x + 3;
16             }
17       }
18 }
```

```
1  public class Q10 {
2        public static void main(String[] args) {
3              int x = 0, y = 0;
4              String sum = "0";
5              double p;
6              while (x < 9) {
7                    y = x / 2;
8                    while (y < x) {
9                          p = (x + 5.0) / 2;
10                         sum = (sum + 2) + x + "y * 2" + (int) p ;
11                         System.out.println(sum);
12                         y = y + 1;
13                   }
14                   x = x + 2;
15                   if (x > 5) {
16                         sum = "2";
17                   } else {
18                         sum += "3";
19                   }
20             }
21       }
22 }
```

```
1  public class Q11 {
2        public static void main(String[] args) {
3              String test = "";
4              int i = 1, j = 1, k = 14;
5              test = "-->";
6              while (i< 5) {
7                    j = --k;
8                    while (j > 9 ) {
9                          test = i + (j-2) + "-->" + test;
10                         System.out.println(test);
11                         j--;
12                   }
13                   i++;
14             }
15       }
16 }
```

```
1  public class Q12 {
2        public static void main(String[] args) {
3              int p = 5;
4              int q = 6;
5              int r = 9;
6              int sum = 0;
7              if (p < 12) {
8                    System.out.println(r + 2);
9              } else {
10                   System.out.println(r + p);
11             }
12
13             if (q > 20){
14                   System.out.println(r + 19);
15             } else if (q <= 6) {
16                   System.out.println(q + 3);
17             } else{
18                   System.out.println(p + q + r);
19             }
20
21             if (r > 15) {
22                   System.out.println(r);
23             } else if (r == 0) {
24                   System.out.println(p + q);
25             } else {
26                   System.out.println(p);
27             }
28
29             if (sum != 0) {
30                   System.out.println(3);
31             } else {
32                   System.out.println(sum + 32);
33             }
34
35             if(p > 0 && r < 10){
36                   System.out.println(p + r);
37             } else {
38                   System.out.println(p - r);
39             }
40       }
41 }
```

```
1  public class Quiz13 {
2        public static void main(String[] args){
3              int x = 0, p = 0, sum = 0;
4              p = 1;
5              x = 2;
6              double q;
7              sum = 0;
8              while (p < 10) {
9                    q =  x + p-(sum+5/3)/3.0%2 ;
10                   sum = sum + (x++) + (int)q;
11                   System.out.println(sum);
12                   if (x > 5)
13                         p += 4/2;
14                   else
15                         p += 3%1;
16             }
17             sum = sum + p;
18             System.out.println(sum);
19       }
20 }
```

```
1  public class Q14 {
2        public static void main(String[] args) {
3              int x = 0, i =0, sum = 0;
4              i = 1;
5              x = 2;
6              sum = 0;
7              while (i< 20){
8                    x = x + i;
9                    sum = sum + x + 1;
10                   System.out.println(sum);
11                   if (x > 5)
12                         i += 2;
13                   else
14                         i += 3;
15             }
16             sum = sum + i;
17             System.out.println(sum);
18       }
19 }
```

```
1  public class Q15 {
2        public static void main(String[] args) {
3              int x = 0, y =0;
4              int sum = 0;
5              while (x < 10){
6                    y = x - 3;
7                    y = 40;
8                    while (y > 22){
9                          if ((sum > 30) && (sum < 40))
10                               sum = sum + x * 2 ;
11                         else if ((sum > 40) && (sum < 50))
12                               sum = sum + x * 3;
13                         else
14                               sum = sum + 23;
15                         System.out.println(sum);
16                         y = y - 10;
17                   }
18                   x += 2;
19             }
20       }
21 }
```

```
1  public class Q16 {
2      public static void main(String[] args) {
3          boolean var1=false, var2=false, var3=false, var4=false,var5=false;
4          boolean var6=false, result1=false, result2=false, result3=false, result4=false;
5          boolean result5=false, result6=false, result7=false, result8=false;
6          boolean result9=false, result10=false;
7          var1=4 > 3 - 1;
8          var2=var1 && false;
9          var3=true;
10         var4=false;
11         var5=true;
12         var6=var3 && false;
13         result1=(var1 || var2) && (8 * 10 > 45);
14         result2=(var1 || var2) && (result1 && false);
15         result3=(var1 && result1) || result2;
16         result4=(var1 || var2) || ((var3 && var1) && false);
17         result5=(var1 && var2) && (result3 || var1);
18         result6=((var3 || var2) && !(result5)) || true;
19         result7=(var4 && result1) && ((result1 && false) || true);
20         result8=((var1 && result3) && (var5 || var6)) && true;
21         result9=((result2 && var2) || (result7 && var1)) && false;
22         result10=!(var1 && true);
23     }
24 }
```

Show the values of the result variables in the above program:

result1	
result2	
result3	
result4	
result5	
result6	
result7	
result8	
result9	
result10	

```
1  public class Q17 {
2        public static void main(String[] args) {
3              int x = 0, i = 0, sum = 0;
4              i = 1;
5              x = 2;
6              sum = 0;
7              while (i< 20) {
8                    x = x + i;
9                    sum = sum + x + 3;
10                   System.out.println(sum);
11                   if (x > 5)
12                         i += 2;
13                   else
14                         i += 3;
15             }
16             sum = sum + i;
17             System.out.println(sum);
18       }
19 }
```

```
1  public class Q18 {
2        public static void main(String[] args) {
3              int x = 0, y =0;
4              int sum = 0;
5              while (x < 10){
6                    y = x - 3;
7                    y = 40;
8                    while (y > 22){
9                          if ((sum > 30) && (sum < 40))
10                               sum = sum + x * 3 ;
11                         else if ((sum > 40) && (sum < 50))
12                               sum = sum + x * 4;
13                         else
14                               sum = sum + 24;
15                         System.out.println(sum);
16                         y = y - 10;
17                   }
18                   x += 2;
19             }
20       }
21 }
```

```
1  public class Q19 {
2      public static void main(String[] args) {
3          boolean var1=false, var2=false, var3=false, var4=false,var5=false;
4          boolean var6=false, result1=false, result2=false, result3=false, result4=false;
5          boolean result5=false, result6=false, result7=false, result8=false;
6          boolean result9=false, result10=false;
7          var1=4 < 3 - 1;
8          var2=var1 && false;
9          var3=false;
10         var4=true;
11         var5=false;
12         var6=var3 && true;
13         result1=(var1 || var2) && (8 * 10 > 45);
14         result2=(var1 || var2) && (result1 && false);
15         result3=(var1 && result1) || result2;
16         result4=(var1 || var2) || ((var3 && var1) && false);
17         result5=(var1 && var2) && (result3 || var1);
18         result6=((var3 || var2) && !(result5)) || true;
19         result7=(var4 && result1) && ((result1 && false) || true);
20         result8=((var1 && result3) && (var5 || var6)) && true;
21         result9=((result2 && var2) || (result7 && var1)) && false;
22         result10=!(var1 && true);
23     }
24 }
```

Show the values of the result variables in the above program:

result1	
result2	
result3	
result4	
result5	
result6	
result7	
result8	
result9	
result10	

```
1  public class Q20 {
2        public static void main(String[] args) {
3              int x = 0, y =0;
4              int sum = 0;
5              while (x < 10) {
6                    y = x - 3;
7                    while (y < 3) {
8                          sum = x - y * 2 ;
9                          System.out.println(sum);
10                         y = y + 1;
11                   }
12                   if (x > 7) {
13                         x++;
14                   } else {
15                         x += 3;
16                   }
17             }
18             sum = x - y * 2 ;
19             System.out.println(sum);
20       }
21 }
```

```
1  public class Q21 {
2        public static void main(String[] args) {
3              int x = 0, y =0;
4              int sum = 0;
5              while (x < 10) {
6                    y = x - 3;
7                    while (y < 3) {
8                          sum = x - y * 3  ;
9                          System.out.println(sum);
10                         y = y + 1;
11                   }
12                   if (x > 7) {
13                         x++;
14                   } else {
15                         x += 3;
16                   }
17             }
18             sum = x - y * 3 ;
19             System.out.println(sum);
20       }
21 }
```

```
1  public class Q22 {
2        public static void main(String[] args) {
3              int x = 0, y =0;
4              int sum = 0;
5              while (x < 10) {
6                    y = x - 3;
7                    y = 40;
8                    while (y > 22) {
9                          if ((sum > 30) && (sum < 40))
10                               sum = sum + x * 2 ;
11                         else if ((sum > 40) && (sum < 50))
12                               sum = sum + x * 3;
13                         else
14                               sum = sum + 23;
15                         System.out.println(sum);
16                         y = y - 10;
17                   }
18                   x += 2;
19             }
20       }
21 }
```

```
1  public class Q23 {
2        public static void main(String[] args) {
3              int x = 0, y = 0;
4              int sum = 0;
5              while (x < 10) {
6                    y = x - 3;
7                    y = 40;
8                    while (y > 22) {
9                          if ((sum > 30) && (sum < 40))
10                               sum = sum + x * 3 ;
11                         else if ((sum > 40) && (sum < 50))
12                               sum = sum + x * 4;
13                         else
14                               sum = sum + 24;
15                         System.out.println(sum);
16                         y = y - 10;
17                   }
18                   x += 2;
19             }
20       }
21 }
```

```
1  public class Q24 {
2        public static void main(String[] args) {
3              int x = 0, p = 0, sum = 0;
4              p = 1;
5              x = 2;
6              double q;
7              sum = 0;
8              while (p < 12){
9                    q =  x + p-(sum+5/3)/3.0%2 ;
10                   sum = sum + (x++) + (int)q;
11                   System.out.println(sum);
12                   if (x > 5)
13                         p += 4/2;
14                   else
15                         p += 3%1;
16             }
17             sum = sum + p;
18             System.out.println(sum);
19       }
20 }
```

```
1  public class Q25 {
2        public static void main(String[] args) {
3              int test = 1;
4              int j = 0, k = 100;
5              while (k > 0) {
6                    while (j < k ) {
7                          test = k + j - 21;
8                          System.out.println(1 + test / 2 +"32");
9                          j+=10;
10                   }
11                   k-=10;
12             }
13       }
14 }
```

```
1  public class Q26 {
2        public static void main(String[] args) {
3              String test = "";
4              int i = 5, j = 0, k = 15;
5              while (i< 10){
6                    k -= 1;
7                    j = k;
8                    while (j > 10 ) {
9                          if (j % 2 == 0) {
10                               test = "<--";
11                               test =  test + i + 2 + "-->" + (j / 2);
12                         } else {
13                               test = "-->";
14                               test =  "-->" + (i / 2) + test + j;
15                         }
16                         System.out.println(test);
17                         --j;
18                   }
19                   i++;
20             }
21       }
22 }
```

```
1  public class Q27 {
2        public static void main(String[] args) {
3              int x = 0, p = 0, sum = 0;
4              p = 1;
5              x = 2;
6              double q;
7              sum = 0;
8              while (p < 12) {
9                    q =  x + p-(sum+7/3)/3.0%2 ;
10                   sum = sum + (x++) + (int)q;
11                   System.out.println(sum);
12                   if (x > 5)
13                         p += 4/2;
14                   else
15                         p += 3%1;
16             }
17             sum = sum + p;
18             System.out.println(sum);
19       }
20 }
```

```
public class Q28 {
	public static void main(String[] args) {
		int test = 1;
		int j = 0, k = 100;
		while (k > 0){
			while (j < k ){
				test = k - j + 21;
				System.out.println(1 + test / 2 +"11");
				j+=10;
			}
			k-=10;
		}
	}
}
```

```
public class Q29 {
	public static void main(String[] args) {
		String test = "";
		int i = 5, j = 0, k = 15;
		while (i< 10){
			k -= 1;
			j = k;
			while (j > 10 ){
				if (j % 2 == 0){
					test = "<--";
					test =  test + i + 3 + "-->" + (j / 3);
				}else{
					test = "-->";
					test =  "-->" + (i / 3) + test + j ;
				}
				System.out.println(test);
				--j;
			}
			i++;
		}
	}
}
```

```
public class Q30 {
	public static void main(String[] args) {
		String test = "";
		int i = 0, j = 0, k = 15;
		test = "<--cat";
		while (i< 5){
			k-=1;
			j = k;
			while (j > 10 ){
				if (j % 2 == 0){
					test += "-->";
					test =  test + i + (j / 2);
				}else{
					test += "<--";
					test =  test + (i / 2) + j;
				}
				System.out.println(test);
				--j;
			}
			i++;
		}
	}
}
```

```
public class Quiz31 {
	public static void main(String[] args) {
		String test = "";
		int i = 2, j = 0, k = 17;
		test = "-->dog";
		while (i< 7){
			k-=1;
			j = k;
			while (j > 12 ){
				if (j % 2 == 0){
					test += "<--";
					test =  test + i + (j / 2);
				}else{
					test += "-->";
					test =  test + (i / 2) + j;
				}
				System.out.println(test);
				--j;
			}
			i++;
		}
	}
}
```

```
public class Q32 {
	public static void main(String[] args) {
		int x = 0, y = 0;
		int sum = 0;
		double p;
		while (x < 10) {
			y = x / 2;
			while (y < x) {
				p = (x + 10.0) / 2;
				sum = (sum % 2) + x - y * 2 + (int) p ;
				System.out.println(sum);
				y = y + 2;
			}
			if (x > 5) {
				x++;
			} else {
				x += 2;
			}
		}
	}
}
```

```
public class Q33 {
	public static void main(String[] args) {
		int x = 0, y =0;
		int sum = 0;
		double p;
		while (x < 10) {
			y = x / 2;
			while (y < x) {
				p = (x + 5.0) / 2;
				sum = (sum % 2) + x - y * 2 + (int) p ;
				System.out.println(sum);
				y = y + 2;
			}
			if (x > 5) {
				x++;
			} else {
				x += 2;
			}
		}
	}
}
```

```
public class Q34 {
      public static void main(String[] args) {
            int x = 0, p = 0, sum = 0;
            p = 1;
            x = 2;
            double q;
            sum = 0;
            while (p < 12){
                  q =  x + p-(sum+5/3)/3.0%2 ;
                  sum = sum + (x++) + (int)q;
                  System.out.println(sum);
                  if (x > 5)
                        p += 4/2;
                  else
                        p += 3%1;
            }
            sum = sum + p;
            System.out.println(sum);
      }
}
```

```
public class Q35 {
      public static void main(String[] args) {
            int test = 1;
            int j = 0, k = 100;
            while (k > 0){
                  while (j < k ){
                        test = k + j - 21;
                        System.out.println(1 + test / 2 +"32");
                        j+=10;
                  }
                  k-=10;
            }
      }
}
```

```
public class Q36 {
	public static void main(String[] args) {
		String test = "";
		int i = 5, j = 0, k = 15;
		while (i< 10) {
			k-=1;
			j = k;
			while (j > 10 ) {
				if (j % 2 == 0) {
					test = "<--";
					test =  test + i + 2 + "-->" + (j / 2);
				} else {
					test = "-->";
					test =  "-->" + (i / 2) + test + j;
				}
				System.out.println(test);
				--j;
			}
			i++;
		}
	}
}
```

```
public class Q37 {
    public static void main(String[] args) {
        boolean var1=false, var2=false, var3=false, var4=false,var5=false;
        boolean var6=false, result1=false, result2=false, result3=false, result4=false;
        boolean result5=false, result6=false, result7=false, result8=false;
        boolean result9=false, result10=false;
        var1=(!true || true) && false;
        var2=var1 && false;
        var3=true && !false;
        var4=false;
        var5=true;
        var6=var3 && false;
        result1=(var1 && var2) && ( 40 % 3 > 45) || (var5 && var6);
        result2=(var1 || var2) || (result1 && false);
        result3=(var1 && result1) || result2 || var5;
        result4=(var1 || var2) || ((var3 && var1) && false);
        result5=(var1 && var2) && (result3 || var1);
        result6=((var3 || !var2) && (result5)) || true;
        result7=(var4 && result1) && ((result1 && false) || true);
        result8=((var1 && result3) && (!var5 || var6)) && true;
        result9=((result2 && var2) || (!result7 && var1)) && !false;
        result10=!(var1 && true);
    }
}
```

Show the values of the result variables in the above program:

result1	
result2	
result3	
result4	
result5	
result6	
result7	
result8	
result9	
result10	

```
public class Q38 {
	public static void main(String[] args) {
		int x = 0, p =0, sum = 0;
		p = 1;
		x = 2;
		double q;
		sum = 0;
		while (p < 12) {
			q =  x + p-(sum+7/3)/3.0%2 ;
			sum = sum + (x++) + (int)q;
			System.out.println(sum);
			if (x > 5)
				p += 4/2;
			else
				p += 3%1;
		}
		sum = sum + p;
		System.out.println(sum);
	}
}
```

```
public class Q39 {
	public static void main(String[] args) {
		int test = 1;
		int j = 0, k = 100;
		while (k > 0) {
			while (j < k ) {
				test = k - j + 21;
				System.out.println(1 + test / 2 +"11");
				j+=10;
			}
			k-=10;
		}
	}
}
```

```
public class Q40 {
	public static void main(String[] args) {
		String test = "";
		int i = 5, j = 0, k = 15;
		while (i< 10) {
			k-=1;
			j = k;
			while (j > 10 ) {
				if (j % 2 == 0) {
					test = "<--";
					test =  test + i + 3 + "-->" + (j / 3);
				} else {
					test = "-->";
					test =  "-->" + (i / 3) + test + j ;
				}
				System.out.println(test);
				--j;
			}
			i++;
		}
	}
}
```

```
public class Q41 {
    public static void main(String[] args) {
        boolean var1=false, var2=false, var3=false, var4=false,var5=false;
        boolean var6=false, result1=false, result2=false, result3=false, result4=false;
        boolean result5=false, result6=false, result7=false, result8=false;
        boolean result9=false, result10=false;
        var1=(!false || false) && true;
        var2=var1 && true;
        var3=false && !true;
        var4=true;
        var5=false;
        var6=var3 && true;
        result1=(var1 && var2) && ( 40 % 3 > 45) || (var5 && var6);
        result2=(var1 || var2) || (result1 && false);
        result3=(var1 && result1) || result2 || var5;
        result4=(var1 || var2) || ((var3 && var1) && false);
        result5=(var1 && var2) && (result3 || var1);
        result6=((var3 || !var2) && (result5)) || true;
        result7=(var4 && result1) && ((result1 && false) || true);
        result8=((var1 && result3) && (!var5 || var6)) && true;
        result9=((result2 && var2) || (!result7 && var1)) && !false;
        result10=!(var1 && true);
    }
}
```

Show the values of the result variables in the above program:

result1	
result2	
result3	
result4	
result5	
result6	
result7	
result8	
result9	
result10	

```
public class Q42 {
	public static void main(String[] args) {
		String test = "";
		int i = 0, j = 0, k = 15;
		test = "<--cat";
		while (i< 5){
			k-=1;
			j = k;
			while (j > 10 ) {
				if (j % 2 == 0) {
					test += "-->";
					test =  test + i + (j / 2);
				} else {
					test += "<--";
					test =  test + (i / 2) + j;
				}
				System.out.println(test);
				if (j == 12) {
					test = "<--cat";
				}
				--j;
			}
			i++;
		}
	}
}
```

```
public class Q43 {
	public static void main(String[] args) {
		String test = "";
		int i = 2, j = 0, k = 17;
		test = "-->dog";
		while (i< 7) {
			k-=1;
			j = k;
			while (j > 12 ) {
				if (j % 2 == 0) {
					test += "<--";
					test =  test + i + (j / 2);
				} else {
					test += "-->";
					test =  test + (i / 2) + j;
				}
				System.out.println(test);
				if (j == 14) {
					test = "-->dog";
				}
				--j;
			}
			i++;
		}
	}
}
```

```
public class Q44 {
	public static void main(String[] args) {
		int x = 0, y =0;
		int sum = 0;
		double p;
		while (x < 10) {
```

```
                    y = x / 2;
                    while (y < x) {
                          p = (x + 10.0) / 2;
                          sum = (sum % 2) + x - y * 2 + (int) p ;
                          System.out.println(sum);
                          y = y + 2;
                    }
                    if (x > 5) {
                          x++;
                    } else {
                          x += 2;
                    }
              }
        }
}
```

```
public class Q45 {
      public static void main(String[] args) {
            int x = 0, y =0;
            int sum = 0;
            double p;
            while (x < 10) {
                  y = x / 2;
                  while (y < x) {
                        p = (x + 5.0) / 2;
                        sum = (sum % 2) + x - y * 2 + (int) p ;
                        System.out.println(sum);
                        y = y + 2;
                  }
                  if (x > 5) {
                        x++;
                  } else {
                        x += 2;
                  }
            }
      }
}
```