

Evaluating Conditions:

When a condition is evaluated in JAVA, it is useful to know both its result (TRUE or FALSE) and which terms were evaluated. For the conditions listed on the following page, please circle all terms that were evaluated and give the final result of the condition. Note: terms in a condition are only evaluated if the (sub)result is still unknown.

Example 1:

```
boolean    a = true, b = true, c = false, d = false;
```

(!a && ((b || c) && !d)) **|** ((a && !c) || d)

TRUE

After evaluating !a, the left sub-result is known to be FALSE. Skipping to the next term in the OR expression, a is TRUE so the next term in the AND expression is evaluated. Upon evaluating !c, (a && !c) is TRUE and the right sub-result is known to be TRUE. The overall result is now known to be TRUE, so no further terms need to be evaluated.

Example 2:

```
int    a = 5, b = 3, c = 2, d = 5;
```

((a > b + c) **)** **|** **(**(a == d) **)** **|** **(**b < c **)** **&&** **(**(c == d) **)** **&&** **(**a >= d **)**

FALSE

Sample 1:

Part A:

```
boolean    a = false, b = true, c = false, d = true;
```

```
(c || (d && a)) || ((b && a) || d) || ((!a && !c) || b)
```

Part B:

```
boolean    a = false, b = true, c = false, d = true;
```

```
((a && c) || !b) || (((b && a) || d) && (c || (d && a)))
```

Part C:

```
int    a = 2, b = 3, c = 2, d = 5;
```

```
((a + b == b + d) || (a > c)) || ((c < d) && (a != d))
```

Part D:

```
int    a = 2, b = 3, c = 2, d = 5;
```

```
((a != b + c) && (c >= b) && (d < c)) || ((c < a) || (a < c)) || (a + c < d)
```

Sample 2:

Part A:

```
boolean    a = false, b = false, c = true, d = true;
```

```
(c || (a && d)) || ((c && a) || d) && (!a && !c) || d)
```

Part B:

```
boolean    a = false, b = false, c = true, d = true;
```

```
((b && d) || !a) || ((d && a) || c) && (a || (b && c))
```

Part C:

```
int    a = 1, b = 2, c = 2, d = 3;
```

```
((a > c) || (a + d <= b + c)) || ((a != d) && (c < d))
```

Part D:

```
int    a = 1, b = 2, c = 2, d = 3;
```

```
((a < b + c) && (b >= c) && (d < c)) || ((c < a) && (a > c)) || (c == d - a)
```