

Solution to Exercises in L#10

Solution to Exercise (1) on Slide 8

What is the value of each logical expression?

! 7

! 0

3 && 0

1 && 0

1 && 1

7 && 1

1 || 0

1 || 3

0 || 0

3 || 0

0 || 7

!0 && 7

! 7 = 0;

! 0 = 1;

3 && 0 = 0;

1 && 0 = 0;

1 && 1 = 1;

7 && 1 = 1;

1 || 0 = 1;

1 || 3 = 1;

0 || 0 = 0;

3 || 0 = 1;

0 || 7 = 1;

!0 && 7 = 1

Solution to Exercise (2) on Slide 9

- If $x = 2$, $y = 5$, $z = 9$, what is the value of the following expressions?

$(x \ \&\& \ y) \ || \ z$ 1 (TRUE)

$! \ x \ || \ (z \ \&\& \ y)$ 1 (TRUE)

$!y \ \&\& \ (!x \ \&\& \ z)$ 0 (FALSE)

Solution to Exercise (3) on Slide 10

If $x = 1$, $y = 5$, $z = 3$ what is the result of the following expressions?

$$(3 * y + 5 - (x \% 5)) \&\& z \rightarrow 1 \text{ (TRUE)}$$

$$x \&\& y \% z \rightarrow x \&\& (y \% z) \rightarrow 1 \text{ (TRUE)}$$

Solution to Exercise (4) on Slide 11 (An Example Program)

```
#include <stdio.h>
void main (void)
{
    int a=0;
    int b=0;

    printf("Please input two integers a and b from the keyboard:\n");
    scanf("%d %d", &a, &b);

    printf("a AND b is: %d", a && b);
    printf("a OR b is: %d", a || b);
    printf("NOT a is: %d", !a);
    printf("NOT b is: %d", !b);

}
```

Solution to Exercise (5) on Slide 15 (An Example Program)

```
#include <stdio.h>
void main(void)
{
    int a=0;
    int b=0;

    printf("Enter two numbers\n");
    scanf("%d%d",&a,&b);

    printf("a > b is %d\n",a >b);
    printf("a < b is %d\n",a<b);

}
```

Solution to example on Slide 26

```
#include "stdafx.h"
void main(void)
{
    int a,b;
    printf("Enter two integers:\n");
    scanf("%d%d",&a, &b);
    if(a >= b)
        {
            if(a > b)
                printf("%d > %d",a,b);
            else
                printf("%d == %d",a,b);
        }
    else
        {
            printf("%d < %d", a, b);
        }
}
```

To determine if a is greater than, equal to, or less than b.

If you enter 3 and 7 from the keyboard, what is the output of the program?

3 < 7

Solution to Exercise (9) on Slide 32

$x = (a == b) ? c-- : c++$

- If a is equal to b, c-- will be evaluated, its value is assigned to x, and 1 will be subtracted from c (side effect)
- If a is not equal to b, c++ will be evaluated and assigned to x, and 1 will be added to c (side effect)

For a=3, b=7, c=0, what is the value of x and c after the expression is evaluated? $x=0, c=1$

How about for a=3, b=3, c=0? $x=0, c=-1$

Solution to Exercise (10) on Slide 34

If $x = 3$, $y = 2$, $z = 9$ what is the value of x, y, z after executing the following code:

```
if (x && y)
    x = 10;
else
    y = 5;
```

$x = 10, y = 2, z = 9$

Solution to Exercise (11) on Slide 35

If originally $x=0$, $y =1$ and $z = 2$ what is the value of x,y,z after the execution of the code?

```
if (y)
    if(x || y)
        z = 10;
    else
        z = 5;
```

$x= 0$ $y =1$ $z =10$

Solution to Exercise (12) on Slide 36

If originally $x = 0$, $y = 0$ and $z = 20$ what is the value of x, y, z after executing the following piece of code?

```
if( z == y) {  
    x++;  
    y++;  
}  
else  
    y--;
```

$x=0$ $y=-1$ $z=20$