Chapter 12

12.1

Name	Type	Offset	Scope
cc	char	-1	BlockA
dd	char	-3	BlockA (i.e., same block as cc)
ff	float	0	BlockA (i.e., same block as cc…)
ii	int	-2	BlockA (i.e., same block as cc…)

12.3 -2147483648 ≤ plusOrMinus ≤ 2147483647
      0 ≤ positive ≤ 4294967295

12.5 LDR R0, ASCII_a
      STR R0, R5, #0   ; c = 'a'

      AND R0, R0, #0
      ADD R0, R0, #3
      STR R0, R5, #-1   ; x = 3

      AND R0, R0, #0
      ADD R0, R0, #10
      STR R0, R5, #-3   ; z = 10

ASCII_a : .FILL 97

12.7

Expression	Value of expression	Value of a afterwards	Value of b afterwards
a | b	15	6	9
a || b	1	6	9
a & b	0	6	9
a && b	1	6	9
!(a + b)	0	6	9
a % b	6	6	9
b / a	1	6	9
a = b	9	9	9
a = b = 5	5	5	5
++a + b--	16	7	8
a = (++b < 3) ? a : b	10	10	10
a <<= b	3072	3072	9

12.9 a. The statement will set letter equal to ! if it originally was a
         lowercase alphabetic character.

      b.   letter = ((letter >= 'a' && letter <= 'z') ?
                      (letter – ('a' - 'A')) : letter);

12.11. a Both j and i are set to the incremented value of i.
       b. j is set to the original value of i. i is then incremented.
       c. j is set to the incremented value of i. i is not modified.
       d. i is incremented. j is not modified.
       e. i is incremented. j is set equal to i.
       f. part i)   statements a, b, d, e modify i
          part ii) statements a, b, c, e modify j
          part iii)   1 : i = 2, j = 2
                        2 : i = 2, j = 1
                        3 : i = 1, j = 2
                        4 : i = 2, j = 0
                        5 : i = 2, j = 2

12.13 a = 1, b = 1, c = 3, result = 6

12.15 The semicolon in C **terminates** a statement.

12.17 a. The value of x would remain unchanged.
       b. x = (x + 1);

12.19

```c
#include <stdio.h>

main()
{
  double taxRate;
  double amount;
  double salesTax;
  double total;

  printf("Enter sales tax rate as percentage : ");
  scanf("%lf", &taxRate);

  printf("Enter dollar amount of purchase : ");
  scanf("%lf", &amount);

  salesTax = amount * (taxRate/100.0)
  total = amount + salesTax;

  printf("Total tax is %f\n", salesTax);
  printf("Total sales amount is %f\n", total);
}
```

Questions in the text denoted by the question mark icon:

Page 314 The result of the printf will be "14". In the memory location allocated to valueD is the value 0x000D.

Page 319 x will be set to 32.

Page 320 The result of the C expression x << 16 on the LC-3 is undefined.