# F.12 Chapter 12 Solutions

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

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
```
#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);
```

```
}
```