# 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

* 1. 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

|  |  |  |  |
| --- | --- | --- | --- |
| **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 |

* 1. a. The statement will set letter equal to ! if it originally was a lowercase alphabetic character.
     1. letter = ((letter >= 'a' && letter <= 'z') ?

(letter – ('a'  'A')) : letter);

12.11 a Both j and i are set to the incremented value of i.

* + - 1. j is set to the original value of i. i is then incremented.
      2. j is set to the incremented value of i. i is not modified.
      3. i is incremented. j is not modified.
      4. i is incremented. j is set equal to i.
      5. 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);

}