# F. 13 Chapter 13 Solutions

13.1

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Offset** | **Scope** |
| operand1 | int | 0 | main |
| operand2 | int | 1 | main |
| operation | char | 3 | main |
| result | int | 2 | main |

13.3

if (a) else

x = b;

x = c;

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 13.5  AND | R0, R0, | #0 | ; | init r0 | at 0 |
| LDR | R1, R5, | #0 |  |  |  |
| BRz  ADD  BRz | CASE\_1  R1, R1, CASE\_2 | #1 | ;  ; | compare  compare | x==0  x==1 |

BR CASE\_DEF ; goto default case

CASE\_1:

ADD R1, R0, #3

STR R1, R5, #1 ; y = 3

CASE\_2:

ADD R1, R0, #4

STR R1, R5, #1 ; y = 4

BR END\_SWITCH ; break

CASE\_DEF:

ADD R1, R0, #5

STR R1, R5, #1 ; y = 5

BR END\_SWITCH ; break

END\_SWITCH:

.

.

.

13.7 This if-else statement **cannot** be converted into a switch statement. All cases labels must be integral constants. The if conditional (x == y) cannot be converted into a case label for the switch.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| 13.9 | a. | 0 |  |
|  | b. | 0 |  |
|  | c. | 11 | 4 |

13.11

#include <stdio.h>

#define TRUE 1

#define FALSE 0

int main()

{

char nextChar; /\* Next character in email address \*/ int gotAt = FALSE; /\* Indicates if At @ was found \*/ int gotDot = FALSE; /\* Indicates if Dot . was found \*/ int charCount = 0;

printf("Enter your email address: ");

do {

scanf("%c", &nextChar);

charCount++;

if (nextChar == '@' && charCount > 1) {

gotAt = TRUE;

charCount = 0;

}

if (nextChar == '.' && gotAt == TRUE && charCount > 1) { gotDot = TRUE;

charCount = 0;

}

}

while (nextChar != ' ' && nextChar != '\n');

if (gotAt == TRUE && gotDot == TRUE && charCount > 1) printf("Your email address appears to be valid.\n");

else

printf("Your email address is not valid!\n");

}

13.13

#include <stdio>

int main()

{

int i; int sum;

i = 0;

do

{

if (i % 4 == 0)

sum = sum + 2;

else if (i % 4 == 1)

sum = sum - 6;

else if (i % 4 == 2)

sum = sum \* 3; else if (i % 4 == 3)

sum = sum / 2;

i++;

}

while (i <= 100);

printf("%d\n", sum);

}

13.15

* + 1. for ( ; condition; )

loopbody;

* + 1. init;

while (condition)

{

loopbody; reinit;

}

13.17 It counts the number of bits that are set in the two’s complement representation of the integer provided by the user.

13.19 Unlike the initializer in a for-loop, the condition of a while loop is evaluated at the beginning of every iteration. A new declaration of the iteration variable would break the syntactical rules of declaration (one declaration of a variable per scope).

# Questions in the text denoted by the question mark icon:

Page 353 It “echoes” the user input back to the monitor. Page 355 Loop 1: 0 1 2 3 4 5 6 7 8 9 10

Loop 2: a b c d e f g h i j k l m n o p q r s t u v w x y z

Loop 3: Counts the number of bits that are set in inputValue