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CSC-11

Professor Wilson

Assignment 1

Section 1.1.3

1. An assembler is a utility program that can covert source code programs from assembly language into machine language, then a linker combines the individual files created by the assembler and creates a single executable program.

3. A one-to-many relationship means that every command written in a high-level language corresponds to more than one command in machine language.

8. Type checking is stricter in higher-level languages like C and C++ because there is a compiler that will let us know when an error occurs due to conflicting types, whereas in assembly language you are freer to work without type checking.

12. mov eax, Y

mov ebx, 4

imul ebx

add eax, 3

mov X, eax

Section 1.2.1

2. Translated programs execute more quickly because they are a direct translation of the language that needs to be compiled while interpreted ones can have redundant translations that would make the programs slower to execute.

3. True

10. They are translated into the Instruction Set Architecture (Level 2).

Section 1.3.9

2. a. 248

b. 202

c. 240

3. a. 00010001, 17

b. 101000000, 320

c. 0011110, 30

5. a. 7

b. 9

c. 15

6. a. 35DA

b. CEA3

c. FEDB

7. a. 1010 0100 0110 1001 0011 1111 1011 1100

b. 1011 0110 1001 0111 1100 0111 1010 0001

c. 0010 1011 0011 1101 1001 0100 0110 0001

Section 1.4.2

1.

|  |  |  |  |
| --- | --- | --- | --- |
| X | ~X | Y | ~X∨Y |
| T | F | T | T |
| T | F | F | F |
| F | T | T | T |
| F | T | F | T |

2.

|  |  |  |
| --- | --- | --- |
| X | Y | X^Y |
| T | T | T |
| T | F | F |
| F | T | F |
| F | F | F |

3. T

4. F

5. T

Section 1.7.1

1. The bit furthest to the left is the most significant.

2. a. 53

b. 150

c. 204

3. a. 110001010

b. 110010110

c. 100100001

4. 100000110

5. a. 16

b. 32

c. 64

d. 128

6. a. 12

b. 16

c. 16

7. a. 35DA

b. CEA3

c. FEDB

8. a. 0000 0001 0010 0110 1111 1001 1101 0100

b. 0110 1010 1100 1101 1111 1010 1001 0101

c. 1111 0110 1001 1011 1101 1100 0010 1010

9. a. 58

b. 447

c. 4097

10. a. 98

b. 1203

c. 671

11. a. E7

b. EB4

12. a. EA

b. D2

13. a. 27641

b. -16092

14. a. 19666

b. -32191

15. a. -75

b. 42

c. -16

16. a. -128

b. -52

c. -73

17. a. 11111011

b. 11010110

c. 11110000

18. a. 10111000

b. 10011110

c. 11100110

19. a. AC3

b. 1217

20. a. B83

b. 1427

21. Hexadecimal = 42, Decimal = 642

22. Hexadecimal = 47, Decimal = 647

25.

|  |  |  |  |
| --- | --- | --- | --- |
| A | B | A∨B | ~ (A∨B) |
| T | T | T | F |
| T | F | T | F |
| F | T | T | F |
| F | F | F | T |