

Written Exam 2 Solutions**1. Java keywords.**

H F E K D I C J

2. Properties of objects.

T F F F F F F T

3. Linked structures.

C E G J

4. Analysis of algorithms.

(a) E A D D

(b) No.

Both functions return true if and only if the argument array contains a duplicate integer. The first method does so by comparing all pairs of elements. The second method does so by sorting the array and comparing only adjacent elements.

5. Regular expressions and DFAs.

C A F H

6. TOY.

1111 2222 BBBB

7. Theory of computing.

B B B C E / G F G A

8. Circuits.

a c d e f

9. Powers of 2.

I C E J M E H G

The 16-bit two's complement representation of -16_{10} is 1111111111110000.

A 32-bit ripple-carry adder is composed of 32 MAJ circuits and 32 ODD circuits. Each MAJ and ODD circuit has 1 multiway OR gate.