SOLUTION NOTES

Programming in Java 2003 Paper 1 Question 9 (ACN)

The keywords used give an interesting and fairly wide tour of Java's features. I expect everybody to get some right but amazingly few people to get them all!

1. abstract;

   An abstract class can not be instantiated, but can be a base class for other non-abstract classes.

2. assert;

   Assertions are a new feature of Java. A statement like assert E or assert E:E tests the first expression to see if it is false, and if so raises a complaint. well if does that if the java execution engine has been instructed to enable assertion checking. Useful while debugging and as a form of documentation.

3. boolean;

   A primitive type with two values, true and false.

4. break;

   Note two uses. One with loops (of any sort) and the other with switch statements. In each case exist from the relevant block. Experts may note break followed by a label of a less immediately enclosing block.

5. byte;

   Another built-in type, this time for 8-bit signed integers.

6. case;

   used with switch to set case labels. Note also default:, and if keen cross-reference the answer about break.

7. catch;

   Exception handler, associated with try and finally. Exceptions raised via throw.

8. extends.

   when declaring a new class you can go "class a extends b" so that the new class is a variant on the old one. Fields and methods from the old are inherited.

9. new

   Create either an instance of a class (invoking its constructor) or an array. Eg new int[10] makes an array of ints (initialised to zero) while new String("hi") creates a new instance of the String class.

10. null

    Wherever Java can have a reference to an array or an object there could instead be the special value null, which may not be dereferenced.