

2002 Paper 6 Question 6

Compiler Construction

Explain a possible implementation technology for Java classes and objects. Your answer should focus on storage layout for objects and on how class variables and methods are accessed—it is not necessary to explain access qualifiers such as `public` and `private`. Illustrate your answer with the following program; in particular indicate its eventual output.

```
class test {
public int n;
public static int s = 100;
public void f(int x) { System.out.println("f1 " + (x+n)); }
public static void main(String args[]) {
    test p = new test();
    test2 q = new test2();
    test r = q;
    p.n = 4;
    q.n = 5;
    q.m = 6;
    r.n = 7;
    p.f(p.s);
    q.f(p.s);
    r.f(q.s);
}
}

class test2 extends test {
public int n, m;
public static int s = 200;
public void f(int x) { System.out.println("f2 " + (x+n+m)); }
}
```

[20 marks]