

2005 Paper 12 Question 7

Comparative Programming Languages

Most large programs that have been written with considerable care and thoroughly checked still seem to contain bugs at a rate of over one per 3000 lines of source code. Systems involving hundreds of millions of lines of code can thus be expected to contain tens of thousands of potentially catastrophic errors.

- (a) List several kinds of programming errors that can appear in programs and discuss their relative importance in relation to the long-term reliability of a large application program. [7 marks]
- (b) Suggest potential ways by which programmers may reduce the number of programming errors they make, paying particular attention to language features that might help, extra features in program development systems and possible changes in overall system architecture. [8 marks]
- (c) In what ways would you expect languages 25 years from now to differ from those that are currently popular? [5 marks]