

8 Further Human–Computer Interaction (afb21)

Predictive text entry systems are familiar on touch screens and mobile phones. This question asks you to consider how the same principles might be used in a programming editor for creating Java code.

- (a) Explain using Bayes' Theorem how such an editor might update its expectation about which identifier will appear next, as the programmer is typing a line of code. Your answer should include a short extract of Java code preceding this line, in order to illustrate the context in which the expectation is being calculated. [5 marks]
- (b) Describe how you could obtain an empirical measurement of the actual improvement in efficiency that results from using this predictive editor in practice. [5 marks]
- (c) Consider the *four* possible combinations of a) small versus large variance, and b) small versus large effect size, in repeating this measurement. For *each* combination, explain the practical interpretation of that data for future development of the programming editor. [5 marks]
- (d) If programmers have the option of whether or not to turn on this new function in the editor, describe some of the factors that might influence their decision-making process, with specific reference to the cognitive processes and sources of information that they would use. [5 marks]