# Homework 5: Abstraction and automation

1. High level languages such as Python, Java and Visual Basic use the principle of **abstraction** to make it faster and easier for programmers to code the algorithms they have designed to solve different problems.

Name **three** types of abstraction used in programming languages, and explain, with an example in each case, how they are used. [6]

2. A team of developers is working on the design and implementation of a new school timetabling system. They have been given data that the school administration felt might be useful for this task

(a) Explain why it is necessary for the developers to use abstraction. [2]

(b) List **five** data items that would be relevant in designing this system. [5]

(c) List **three** data items that would be irrelevant, even though they may have been supplied by the school office. [3]

3. Police have have known for a long time that everyone’s shoeprint is unique. In some areas of the UK, about 70% of suspects’ shoeprints are scanned and compared with the ones left at the scene of crime.

(a) Identify **one** similarity and **one** difference between fingerprint scanning and shoeprint scanning. [2]

(b) Give **one** reason why shoeprint scanning may be **less** effective than fingerprint scanning in catching criminals. [1]

(c) Give **one** reason why shoeprint scanning may be **more** effective than fingerprint scanning in catching criminals. [1]

[Total 20 marks]