

1994 Paper 2 Question 12

If a program is written cautiously and in a suitable high level language then it can be “portable”, and one set of source files can be used with little or no change on a wide variety of computers and with many different operating systems. Explain the steps that are taken to turn the source version of such a program into a runnable version of the application that it represents. Indicate all the places where programs or pieces of code not derived from the portable sources are involved. [4 marks]

Identify which parts of the software preparation path (if any) will need to be altered in each of the following cases, commenting on just where programs and code (not being directly part of the portable source) can be used unaltered and where different versions are called for:

- (a) The program is to be run on different hardware configurations of the various models of the same computer; [4 marks]
- (b) The program is to be run on computers which share the same hardware design and have the same processor, but under different operating systems (for example some PCs will run MSDOS, Unix and several other operating systems); [4 marks]
- (c) The program is to be run on two machines that share a common operating system (such as Unix) but which have different processor designs. [4 marks]

Suppose the portable programming language involved is implemented using an interpreter rather than a compiler, and the language is already implemented on all the computer systems involved. How does this affect the amount of work and the number of changes needed when building an executable version of a program for use in many different environments? [4 marks]