Operating Systems

(a) What was the key innovation of the von Neumann Architecture? [2 marks]

(b) Describe (with the aid of a diagram where appropriate) the representation in main memory of:

(i) an unsigned integer; [2 marks]

(ii) a signed integer; [2 marks]

(iii) a floating point number; [4 marks]

(iv) an instruction. [4 marks]

(c) Does an operating system need to know whether the contents of a particular register represent a signed or unsigned integer? Justify your answer. [2 marks]

(d) Describe what occurs during a context switch. [4 marks]