Instructions

Worksheet 1

1 (a) Explain what is meant by ‘machine code’ or ‘machine language’.

(b) State the format in which the instructions are coded.

(c) What is the name given to the range of instructions that can be executed?

(d) State whether there is a common set of instructions or if each set is unique for each processor or family of processors.

2 Each machine code instruction consists of two fields.

State the names of each of these fields and the information that they contain.

3 Explain what mnemonics are and why they are used by programmers.

Instructions (continued)

Worksheet 1

4 The following table shows part of the instruction set of a particular microprocessor that uses 4 bits for opcode and 8 bits for the operand.

Opcode	Mnemonic	Explanation
0000	STO	Store data at memory location indicated by the operand.
0001	LOAD	Load the number located in the operand
0010	LOAD	Load the number found at the memory location indicated by the operand.
0100	ADD	Add the number located in the operand.
1000	ADD	Add the number found at the memory location indicated by the operand.

(e) Give the opcodes and operands for the following:

(i) Load the number 13.

Opcode	Operand

(ii) Load the number found at memory location 6.

Opcode	Operand

(iii) Add the number 113.

Opcode	Operand

(iv) Load the number 10, add the number 21 and store the result at memory location 30.

Opcode	Operand

(f) State the data that would be found at memory location 30.

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