Problem 1

Consider a processor with the following specifications.

– It handles 150 different instructions

– Register file with 256 registers

– 1 Giga-position memory

– Each instruction has two explicit operands:

  • 1st operand: Indicates a register (direct to register)

  • 2nd operand: Indicates a memory position

– Possible addressing modes 2nd operand:

  • Direct to memory

  • Relative (explicit register)

  • Indirect via memory

Design the instruction formats for this processor; which fields does it have and what is the bit width.