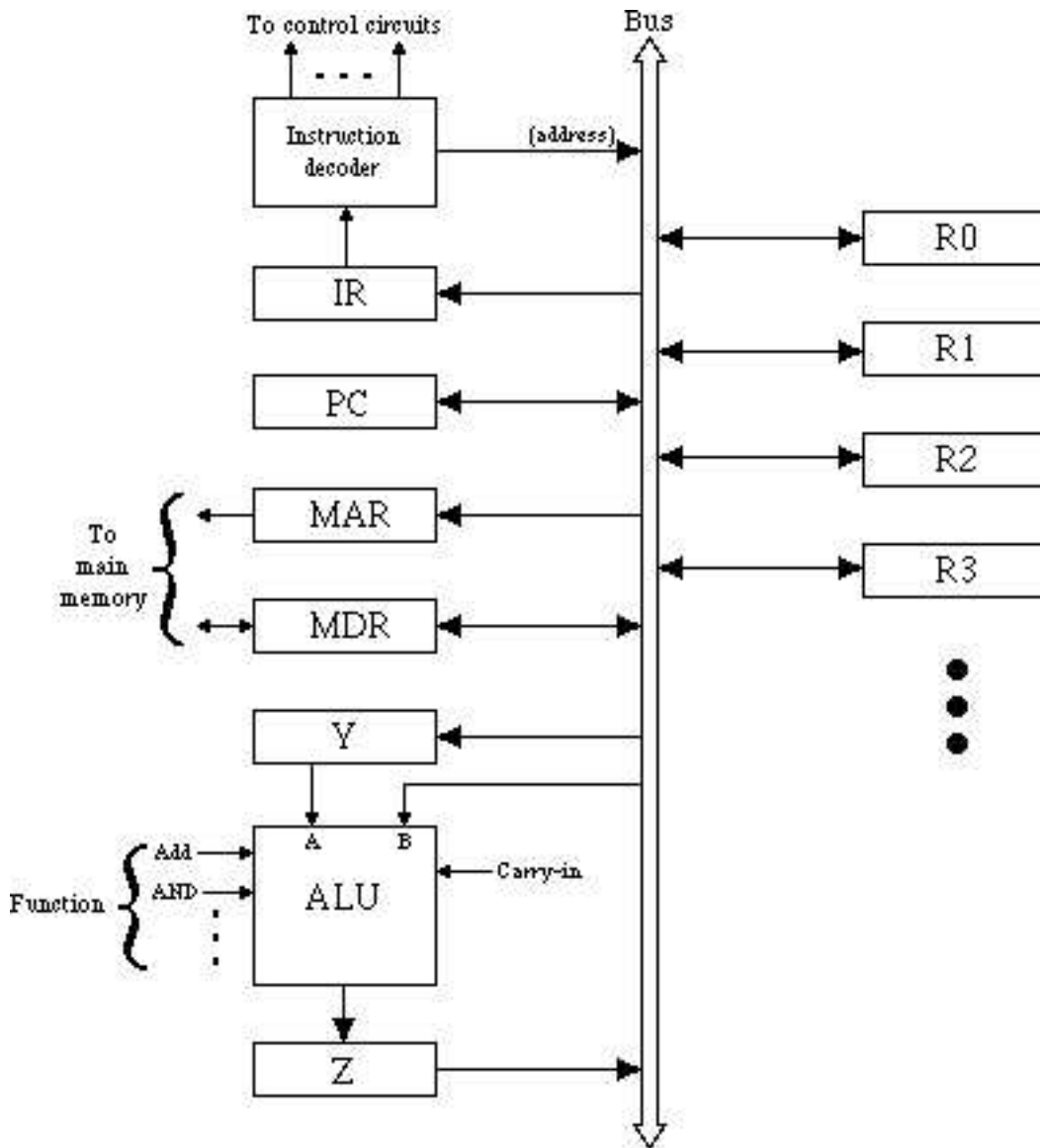


## CSC 258

### Simple one-bus CPU architecture



Data paths represented by the large arrows (namely, each arrow to or from the bus except for the ALU input, plus  $Z_{in}$ ) correspond to microprogram control lines. Control lines also include Read and Write (memory functions), Wait MFC, the ALU functions, Set CC, Set Carry-In, Carry-Forward, Zero A, Complement B, and End. Set CC causes the condition codes to be set by the current ALU operation. Carry-Forward causes the C condition code to be supplied as Carry-In. Zero A provides a zero value to the ALU which can be used in the same cycle, without affecting the contents of Y. End makes the current microinstruction the last microinstruction of the microroutine by resetting the  $\mu$ PC.

There are also eight conditional microbranch control lines, of the form “If C then End”, “If  $\bar{C}$  then End”, and so on for all of C, V, Z, and N. ALU operations only set the condition codes if the Set CC bit is on. Note that when a microbranch is taken, the current microinstruction still completes, just as it does with the End control line.