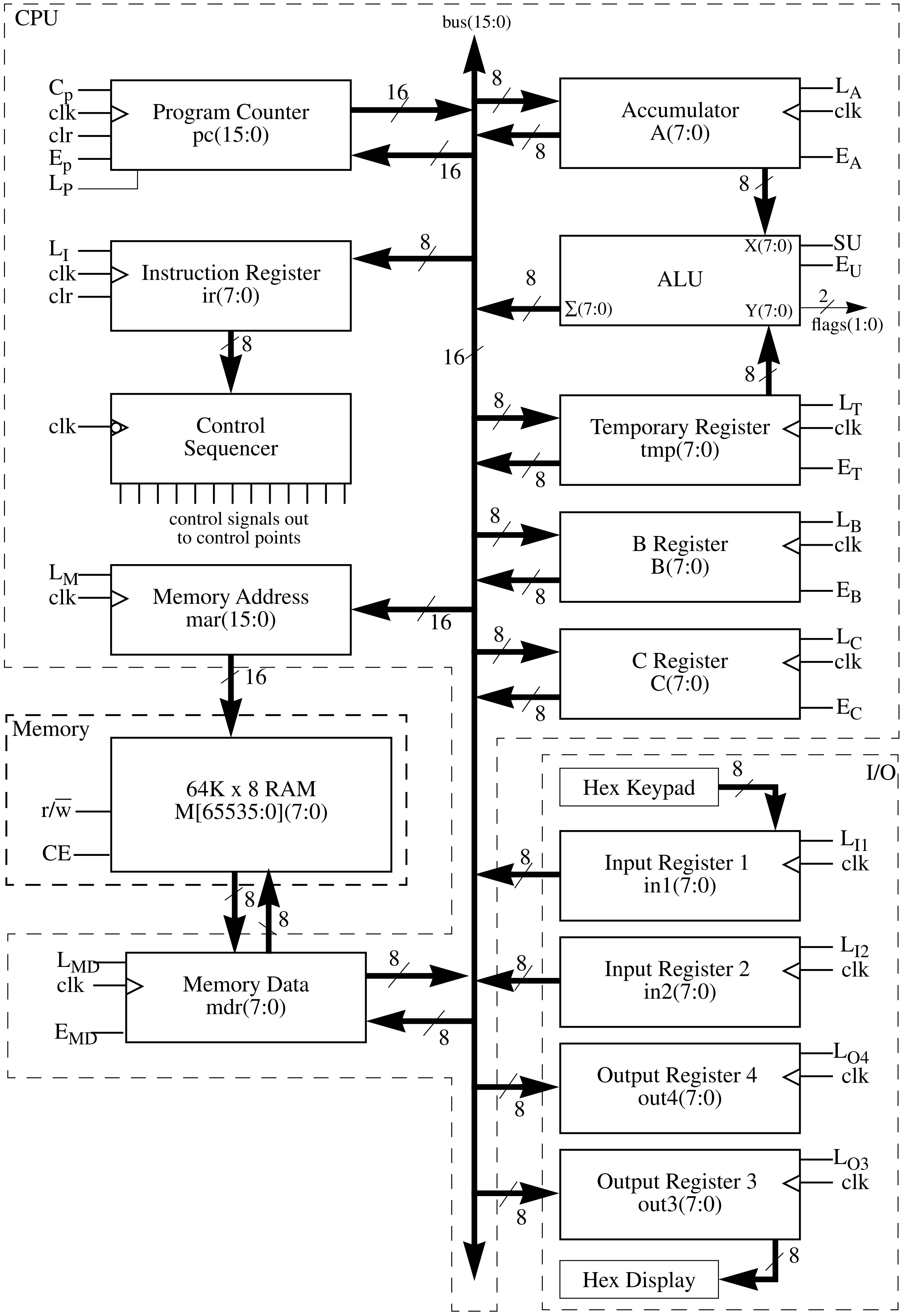SAP-2 hardware