SNS COLLEGE OF TECHNOLOGY

An Autonomous Institution
Coimbatore-35

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

MICROPROCESSORS AND MICROCONTROLLERS

II YEAR/ IV SEMESTER

UNIT 1 – 8085 AND 8086 ARCHITECTURE

TOPIC – Introduction to 8085 Architecture

• 8085 is an 8-bit microprocessor as it operates on 8 bits at a time and is created with N-MOS technology.

• Basically, 8085 was the first commercially successful microprocessor by Intel. As some of the architectural drawbacks associated with 8080 was also eliminated by 8085.

• The size of the data bus of 8085 is 8 bits while that of the address bus is 16. Therefore, can address 64 KB (i.e., 2^{16}) memory. Also, as it can perform 8-bit operation thus the size of ALU is also 8-bit.
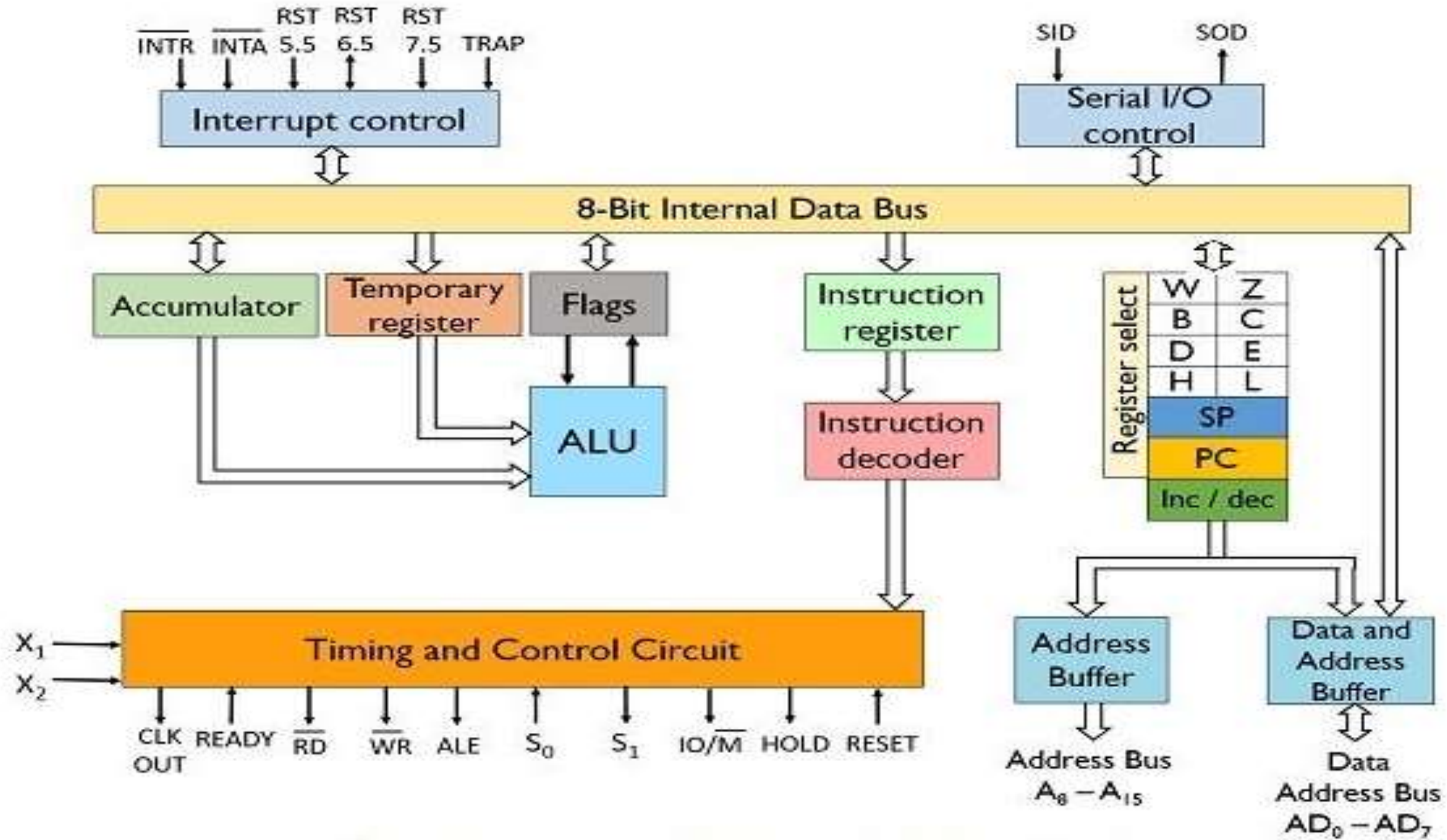
8085 Architecture can perform operations that are given below:

• Operates on and stores 8-bit data.

• It executes arithmetic and logic operations.

• 8085 also sequences the instructions to be executed.

• Stores data temporarily.

• However, in order to perform all such operations, the processor needs a control unit, arithmetic logic unit, registers, buses etc.

• **Arithmetic and Logic Unit (ALU) :**It is used to perform mathematical operations like: addition, multiplication, subtraction, division, decrement, increment, etc.

• **Flag Register :** It is an 8-bit register that stores either 0 or 1 depending upon which value is stored in the accumulator.

• **Accumulator :** Accumulator is used to perform I/O, arithmetic and logical operations. It is connected to ALU and internal data bus.
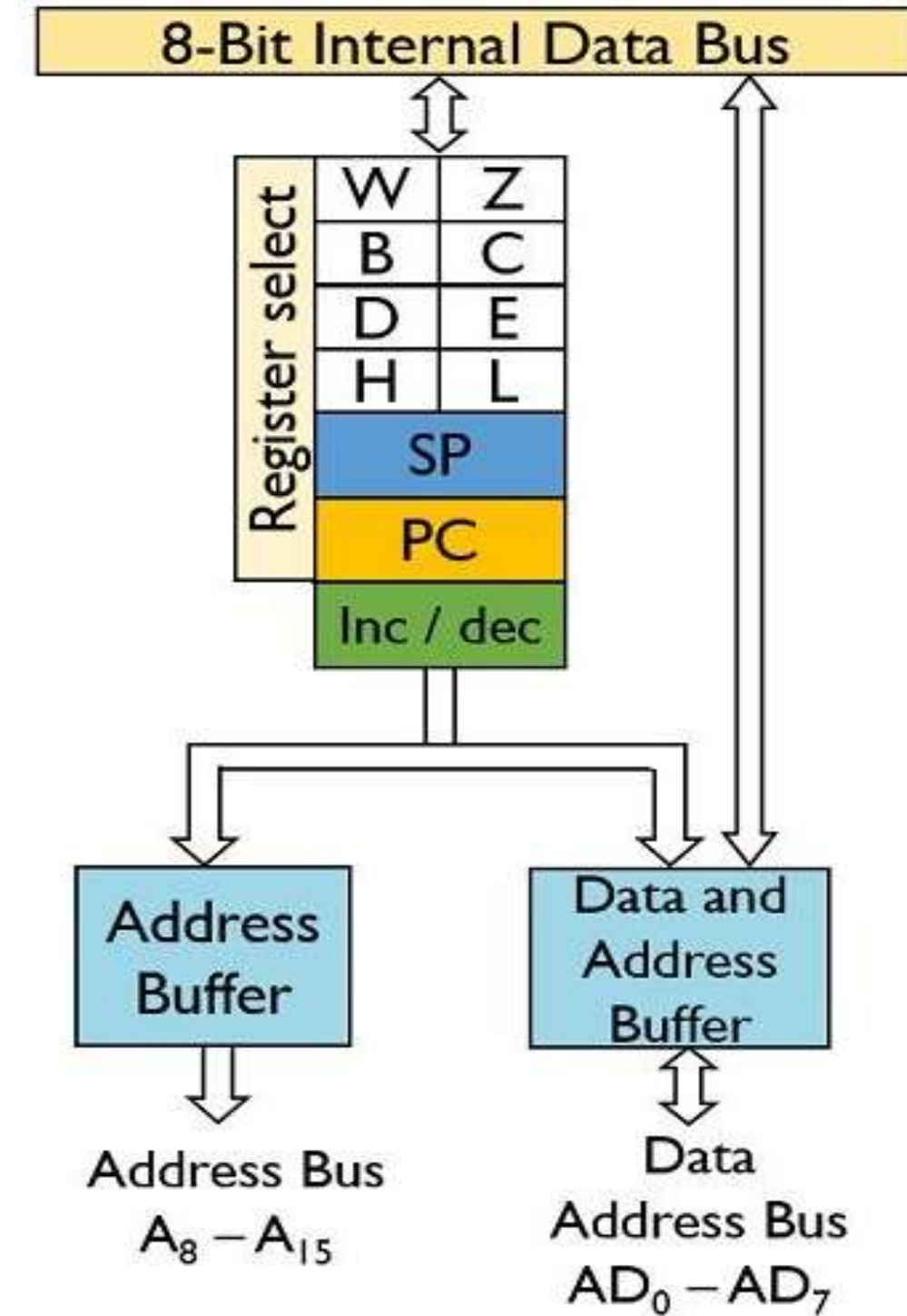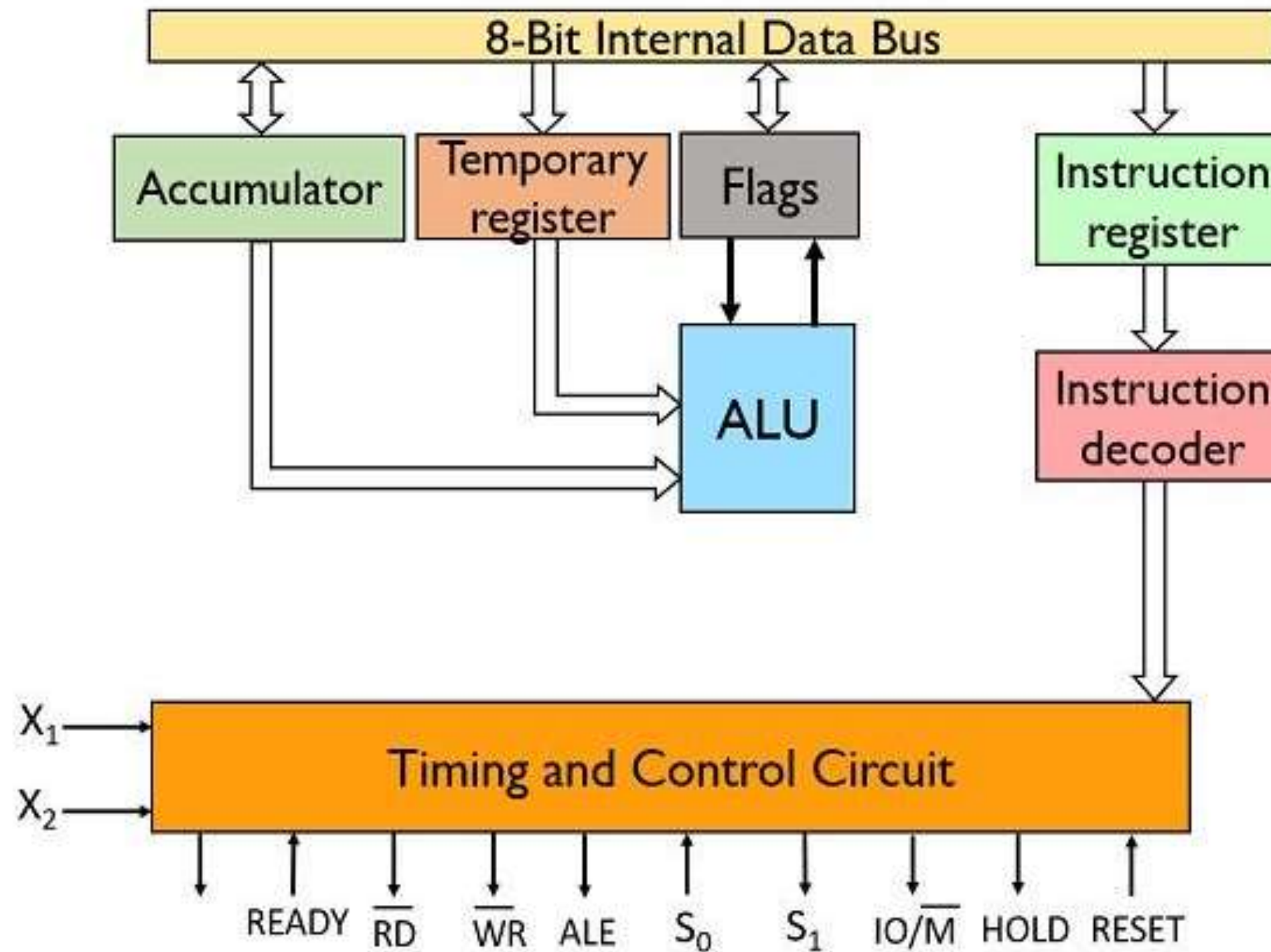
- **General Purpose Registers :** There are 6 general purpose registers. These registers can hold 8 bit values. These 8-bit registers are B,C,D,E,H,L. These registers work as 16-bit registers when they work in pair like: B-C, D-E, H-L.

- **Program Counter :** Program Counter holds the address value of the memory to the next instruction that is to be executed. It is a 16-bit register.

- **Stack Pointer :** It works like stack. In stack ,the content of register is stored that is later used in the program. It is a 16-bit special register.

8085 ARCHITECTURE

• **Temporary Register :** It is a 8-bit register that holds data values during arithmetic and logical operations.

• **Instruction register and decoder :** It is a 8-bit register that holds the instruction code that is being decoded. The instruction is fetched from the memory.

• **Timing and control unit :** The timing and control unit comes under the CPU section, and it controls the flow of data from CPU to other devices.

• It is also used to control the operations performed by the microprocessor and the devices connected to it. There are certain timing and control signals like: Control signals, DMA Signals, RESET signals, Status Signal.

• **Interrupt control :** Whenever a microprocessor is executing a main program and if suddenly an interrupt occurs, the microprocessor shifts the control from the main program to process the incoming request.

• After the request is completed, the control goes back to the main program.

- There are 5 interrupt signals in 8085 microprocessors: INTR, TRAP, RST 7.5, RST 6.5, RST 5.5

- **Address bus and data bus :** Data bus is bidirectional and carries the data which is to be stored.

- Address bus is unidirectional and carries location where data is to be stored.

- **Serial Input/output control :** It controls the serial data communication by using Serial input data and Serial output data.

THANK YOU