

Assignment 6.1:

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Q. Understanding the working of 8085 from animated video.

Ans: ① Working of 8085 microprocessor:

- ① Accumulator: ① It is an 8 bit register. ② It holds on of the data which is processed by ALU. ③ And holds the result of the operation done by ALU on 'A' register. ④ It is connected to the 8 bit internal data bus. ⑤ Accumulator can receive or send data to the bus.
- ② Temporary register: ① It is an also 8 bit register. ② It holds data from external memory or general purpose registers. ③ It provides an input to the ALU, and also stores the operands of arithmetic logic operations.
- ③ General purpose register: ① These are also 8 bit registers. ② There are 6 general purpose registers in 8085 microprocessors, that are B, C, D, E, H, L. ③ The permitted pairs are BC, DE, HL. ④ HL is used to form 16 bit pointers.
- ④ Stack pointer: ① This is a 16 bit register and it is used as memory pointer. ② It ~~not~~ maintains address of the last byte entered in the stack which is portion of the memory. ③ It is incremented when data is retrieved from stack and

decremented when data is loaded in stack.

⑤. Program controller:

- ① It is also a 16 bit register, and used as a memory pointer.
- ② It points to the address of the instruction that is to be executed.
- ③ After execution of an instruction program controller incremented by one. That is the address of the next instruction to be executed.
- ④ Also use for sequencing the execution of the instruction.

⑥. Incrementer and Decrementer:

- ① Incrementer increases SP or program counter by one.
- ② Decrementer decreases SP or program counter by one.

⑦ ALU: ALU stands for Arithmetic logical unit.

- ① It performs the arithmetic operation i.e. addition, subtraction, etc. And logic operations i.e. XOR, OR.
- ② The Accumulator and temporary register provides the inputs to the ALU and output is stored in accumulator register.

⑧ Flags: ① The flags is a register of the 5 individual flip flop, which is change 5 contents to the 0 or 1 after execution of the instruction in ALU.

⑨ Instruction Register and Decoder:

- ① The instruction fetched from memory is loaded in the instruction register.
- ② The contents of the instructions is decode

by decoder and determined the operation to be followed the execution of the instruction and direct control and timing unit

Accordingly to following type

⑩ Timing and Control Unit:

It has the oscillator and controller sequencer. Oscillator generates the two phase clock signal. CLK and CLK' which synchronize all register. Controller sequencer generates the control signal which are needed for internal and external control. This microprogrammed and has ROM which stores the daily routine which needed for execution of the instruction.

⑪ Interrupt control: It answer the request from the input/output devices.

⑫ Serial Output control: It controls the serial data communication using two instruction SIM and RIM.

⑬ Address buffer and Address data buffer:

① Content of SP and program counter is loaded on the address bus and address data bus.

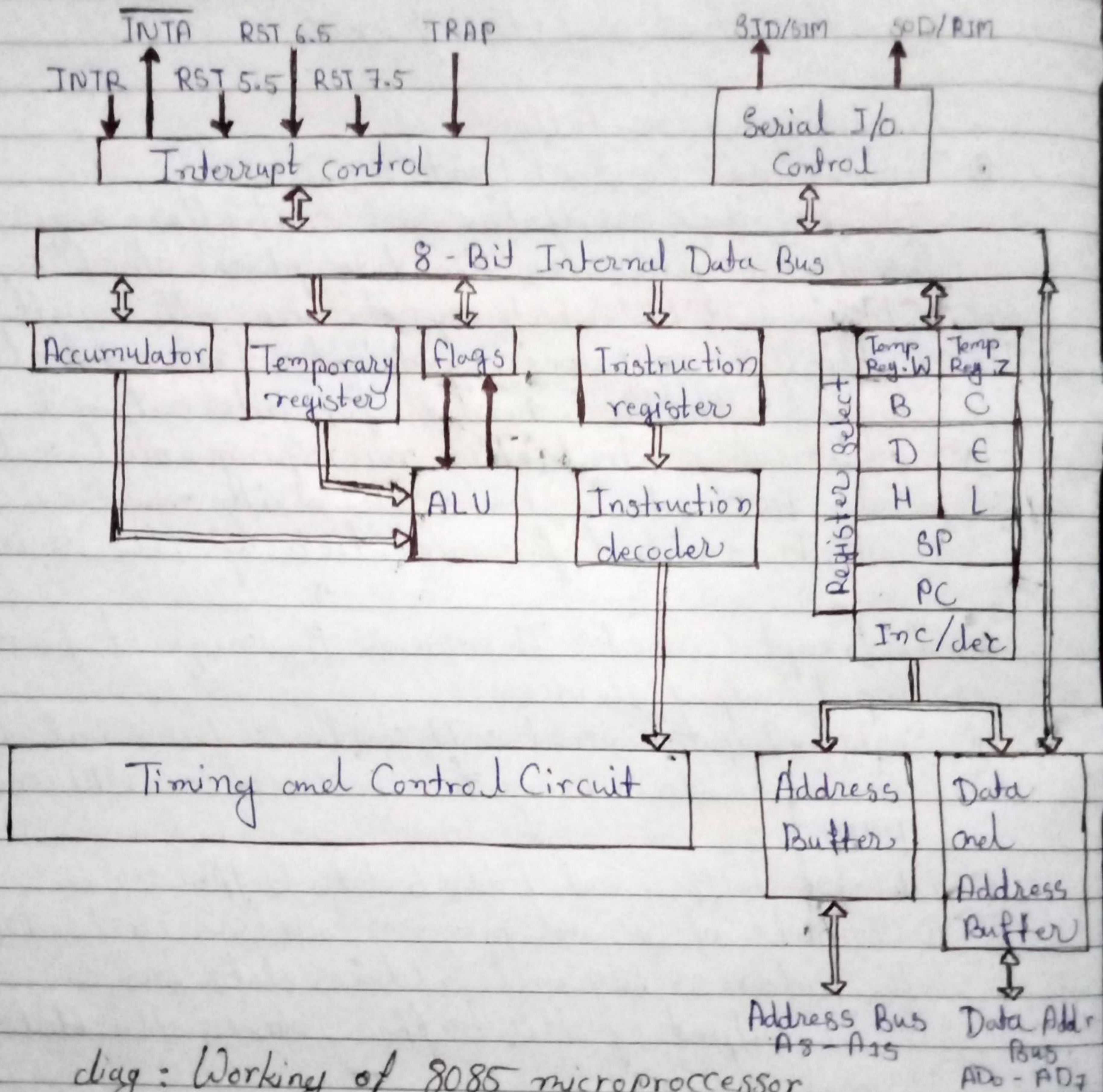
② The output of this buffer drives the data bus and address bus.

⑭ Data bus and Address bus:

① Data bus has the data i.e. to be stored.

② Address bus has address where data to be stored.

③ These buses are connected to memory and chips.



diag : Working of 8085 microprocessor.