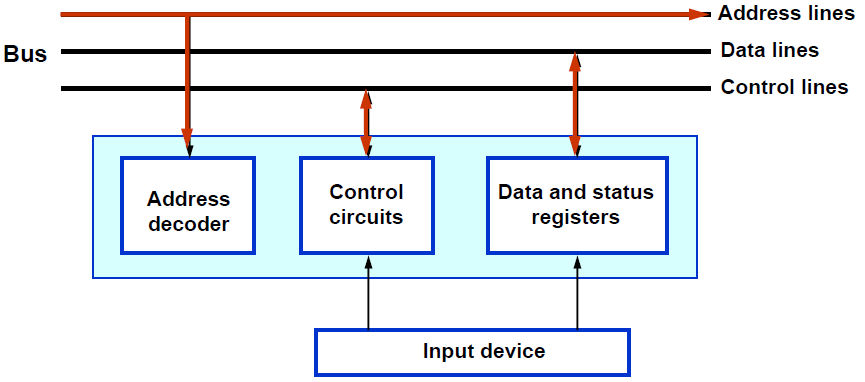
**Input/output system(IO)**

**IO Interface for an Input Device**

The address decoder, the data and status registers, and the control circuitry required to coordinate IO transfers constitute the device’s interface circuit



address decoder : is used for IO device identification.

status registers: It is used to determine the status for each IO device, whether it is ready to transfer data to the processor

There are two methods in which the processor can **address** the input/output devices:

**1-Shared IO:**

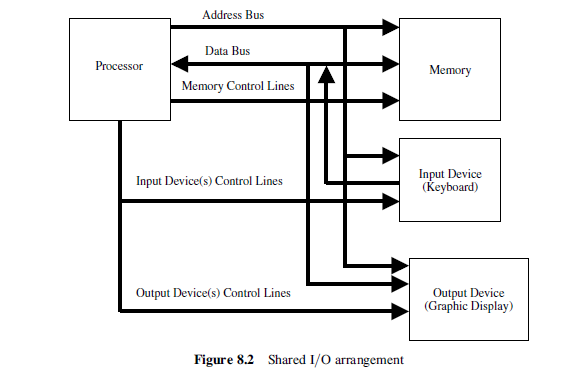
• IO devices are assigned particular addresses, isolated from the address space assigned to the memory.

• An **input** and **output** instructions are used to input and output data.

• The address and data lines from the CPU can be shared between the memory and the IO devices.

• A separate control line will have to be used. This is because of the need for executing input and output instructions.

•The main **advantage** of the shared IO arrangement is the *separation* between the memory address space and that of the IO devices. Its main **disadvantage** is the need to have special input and output instructions in the processor instruction set.



**-memory-mapped IO**:

• It deal with input and output registers as if they are regular memory locations

•It uses **Read** and **Write** (memory instruction).

• The main **advantage** of the memory-mapped IO is the use of the read and write instructions of the processor to perform the input and output operations, respectively. It eliminates the need for introducing special IO instructions.

• The main **disadvantage** of the memory-mapped IO is the need to reserve a certain part of the memory address space for addressing IO devices, that is, a reduction in the available memory address space.

