ECE 448
Class Exercise

Draw a detailed block diagram of the digital system including:

1. the PicoBlaze-6 core, KCPSM6
2. all external memories required for the basic operation of the PicoBlaze-6 core
3. four input registers with the virtual addresses 00, 40, 80, and C0
4. four output registers with the virtual addresses C0, C4, C8, CC
5. a D flip-flop with the output Q connected to the interrupt input of the PicoBlaze core, input SET connected to the external port INT, and input CLR connected to an appropriate output of the PicoBlaze core.

Assume that

- the input register with the address C0 is identical to the output register with the address C0
- the input and output registers specified above are the only registers that the PicoBlaze-6 core is communicating with
- your system needs to be able to allow the PicoBlaze-6 core to write to all aforementioned output registers, and read from all aforementioned input registers using instructions OUTPUT and INPUT, respectively
- you need to provide all details of the address decoder, and build it out of basic logic components you are familiar with
- all registers and flip-flops have a reset input connected to the external port RESET.

Please clearly mark on your schematic:

- sizes of all memories and registers
- sizes and directions of all buses.

Hint:
Below please find an interface of the PicoBlaze-6 core:

