

## COMP 3315 Lab 7: SMIPS Register File

Number and Name:

### 1. Object: Register File Design

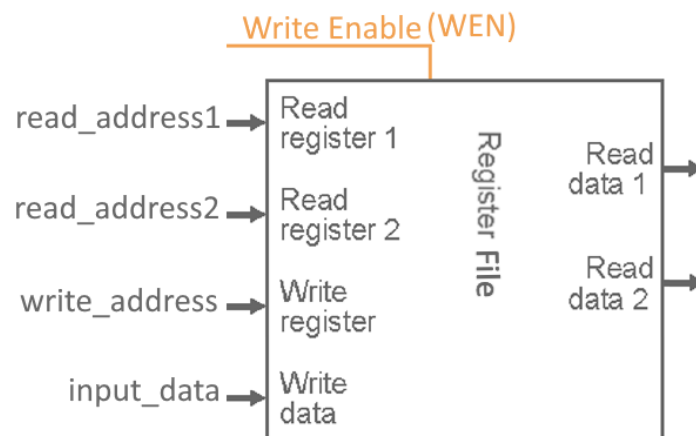
2. **Procedure:** We will build a simplified MIPS (SMIPS) processor of 8- bits. The instruction format of 18-bits is as below:

OPCODE	RS	RT	RD	Shift Amount	Funct
(4)	(3)	(3)	(3)	(2)	(3)

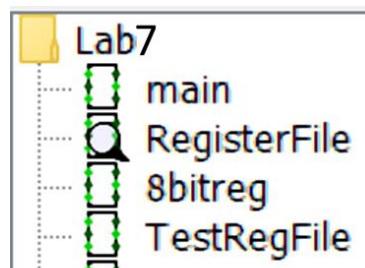
The word length is 8 bits and we have a total of 8 registers. With 4 bits for opcode there is a possibility of 16 instructions but we will use only a subset.

- Construct a 8-bit register using 1-bit D flip-flops. You will use this 8 bit register as subcircuit. ( Name it as 8bitRegister)
- Construct 8 x 8-bits register file with subcircuits in (a). With necessary components such as decoder and multiplexer. (Name it as RegisterFile)
- Provide clock, input\_data, WEN, write\_address, read\_address1 and read\_address2 inputs to the register file.
- Create another circuit named TestRegFile and test write and read operations for the register file.

You are expected to implement the Register File Design. Upload .circ file for your labwork.



Register File Circuit Design



Project Directory