School of Computing
Computer Science Program

CDA 3101

Introduction to Computer Logic

Assignment 6

Rubric

Student Name			
Assignment Name	**Assignment 06: Flip-Flops & Registers**		
Checklist	**Maximum Available Points**	**Received Points**	**Information**
Logic diagram of designed circuit showing 4 flip-flops as a 4 bit register. 2 D-FF & 2 JK-FF.	25		All Inputs and outputs clearly marked. Only one data switch per flip-flop. Demonstrate a captured pattern of 1010.
Clock Emulation	25		Clock circuit using pushbutton switch designed and working correctly?
Reset Circuit	25		Clear circuitry using pushbutton switch designed and working correctly?
JK Inputs	25		JK Flip-Flops Inputs designed and working correctly? Note: only one switch per flip-flop.
Other Documents	0		No tables or design work required
Multisim files			See Notes for Scoring
Final Grade	**Total =**		

Notes for Scoring:

Note 1: Assignments will not be accepted late.

Note 2: Any assigned quizzes that are associated with this assignment will be taken on Canvas unless otherwise noted.

Note 3: No "print screens" will be accepted from Multisim. Print all documents using the print function within the software.

Note 4: All submitted documents from MultiSim must contain the student's name and UNF n-number printed via the software (insert text). No name and number; no points!!!!

Note 5: You must also submit the Multisim circuit that was used to create the required documents for this assignment. A final grade of "0" will be assigned if the submitted circuit fails to work completely or is not submitted.

Note 6: All waveforms must be derived from the submitted logic diagram associated with the waveform.

Assignment 6: Flip-Flops & Registers

The purpose of this assignment is to help the student become familiar with circuit design using flip-flops.

Equipment needed:

74LS74, 74LS73 or 74LS76
Other Assorted TTL chips
Multisim Software

Pre-lab:

A) Design a 4-bit register using two "D" flip-flops (74LS74), two "JK" flip-flops (74LS73 or 74LS76), 4 input switches for DATA input, 1 push-button switch acting as CLOCK, 1 switch for Clear / Reset, and any other necessary support logic. The 4-bits will have the capability of being loaded in parallel with one clock pulse, and cleared without a clock pulse. Note that the clock will be simulated using the single push-button switch. The output of the register will be monitored using four indicators.

Refer to your notes given in class for circuit design.

Using the Multisim Software:

A) Implement the design using the Multisim software. Inputs and outputs should be clearly marked. Note that each flip-flop will have only one logic input / switch for data (four total). A single CLOCK, and single CLEAR signal will also go to all four flip-flops. The output of the register will be monitored using four probes. Test your circuits for proper operation.

B) No waveforms are required in this assignment. Print this circuit to a "pdf" file using procedures within Multisim. Note that print screens (screenshots) will not be accepted. *Your printed document must demonstrate a captured pattern of 1010.* **Submit this document for grading.**