Combinational double-dabble

Students

You need to be alert to (usually minor) changes that may be made to the assignment statement or to the guidelines after the assignment is first put up. Refresh this frame and re-read the assignment carefully before you make your final submission.

Part 1 (≥5 comparator)

- Design a comparator to take as input a 4-bit binary number X and output 1 if $X\geq5$ and 0 otherwise
- Test that it works by applying appropriate inputs and checking the outputs
- Label the terminals to reflect their roles
- Save it as a regular circuit (logic file), reopen and retest
- Save it as a component (cmp file), reopen and retest

Part 2 (≥5 3adder)

- Design a conditional adder to take as input a 4-bit binary number X and output $X+3$ if $X\geq5$ and X otherwise; you may use components designed earlier
- Test that it works by applying appropriate inputs and checking the outputs
- Label the terminals to reflect their roles
- Save it as a regular circuit (logic file), reopen and retest
- Save it as a component (cmp file), reopen and retest

Part 3 (4-bit binary to BCD convertor)

- Using the conditinal adder modules, design a combinational 4-bit binary to BCD convertor
- Test that it works by applying appropriate inputs and checking the outputs
- Label the terminals to reflect their roles
- Save it as a regular circuit (logic file), reopen and retest

Part 4 (6-bit binary to BCD convertor)

- Using the conditinal adder modules, design a combinational 6-bit binary to BCD convertor
- Test that it works by applying appropriate inputs and checking the outputs
- Label the terminals to reflect their roles
- Save it as a regular circuit (logic file), reopen and retest

Part 5 (7-bit binary to BCD convertor)

- Using the conditinal adder modules, design a combinational 7-bit binary to BCD convertor
- Test that it works by applying appropriate inputs and checking the outputs
- Label the terminals to reflect their roles
- Save it as a regular circuit (logic file), reopen and retest

Marking guidelines

Assignment marking is to be done only **after** the deadline expires, as submissions gets blocked after the assignment is marked. Enter the breakup of marks while marking.

≥5 comparator	
Correctly working circuit	**6**
Labels	**2**
Saving and component creation	**2**
≥5 3adder	
Correctly working circuit	**6**
Labels	**2**
Saving and component creation	**2**
4-bit binary to BCD convertor	
Correctly working circuit	**7**
Circuit diagram and explanation	**3**
6-bit binary to BCD convertor	
Correctly working circuit	**7**
Circuit diagram and explanation	**3**
7-bit binary to BCD convertor	
Correctly working circuit	**7**
Circuit diagram and explanation	**3**
Total Marks	*50*

Assignment submission

A PDF report, as appropriate, should be submitted. Submit all your files together.

Use electronic submission via the WBCM link

You should keep submitting your incomplete assignment from time to time after making some progress, as you can submit any number of times before the deadline expires. **You should submit all your files together**.

Warning