You are asked to add the datapath parts and control signals needed to implement the `addiu` instruction in the multi-cycle datapath and control. Instruction `addiu` adds an immediate unsigned value. For example:

\[
\text{addiu } $1, $2, 100
\]

means:

\[
$1 = $2 + 100
\]

- Show the additions to the datapath and control lines of Figure 5.28 on page 323 in the textbook that are needed to implement this instruction in the multi-cycle datapath.
- Show the steps in executing the `addiu` instruction in the multi-cycle datapath, using the same breakdown of steps as used in this chapter of the textbook.
- Show the additions in the finite state machine of Figure 5.37 on page 338 in the textbook that are needed to implement the `addiu` instruction.

- Problems 5.30 and 5.31 (page 357 of the textbook)
- Problem 6.3 (page 455 of the textbook)