2 **(** **points)** **min.** Signed and unsigned numbers (Sp2018 Quiz Q#2)

Preparatory exercise for future semesters

2.1 Given two 4-bit numbers **X** (**X3 X2 X1 X0**) and **Y** (**Y3 Y2 Y1 Y0**), we need to produce **2XgtY** (**2X** is *greater* than **Y**, treating **X** and **Y** as *signed* numbers represented in 2's complement notation) and also **2XhiY** (**2X** is *higher* than **Y**, treating **X** and **Y** as *unsigned* binary numbers). Use the following 5-bit ripple-carry adder/subtracter as a subtracter. Notice that **C4** is also brought out. Is **2X** higher, if **X3** is a **1**? If so, for unsigned comparison, we can manage with the lower 4-bit part of the 5-bit adder/subtracter! Note, that we are trying to produce, "**gt**", [not "**gte**" (greater or equal)] and it is "**hi**", [not "**his**" (higher or same)].

C4 = 1 means that X2 X1 X0 0 is higer or equal to Y3 Y2 Y1 Y0.

Space for your own notes: