

Lab1

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Circuitry:

Key 1 connected to PD2

Key 2 connected to PD3

Light 1 connected to PB1

Light 2 connected to PB2

Light 3 connected to PB3

Program:

- To invert the behavior of the light for task 7.3, we simply exchanged to outputs of the 'if' and 'else' statements. Initially the program had set the first (red) light to be off, unless both buttons were pushed. By doing this the light would now automatically be on, and only go off, if both buttons were pushed.
- For task 7.4 we needed to make it so that light 2 (yellow) would come on if either of the buttons was pushed. In order to achieve this we copy/pasted the logic from task 7.3, and then made two major changes. We changed the outputs from '(1 << PB1)' to '(1<<PB2)'. We also changed the logical operators in the if statement from '&&' to '||', or from logical and to logical or. So now only one button or the other (or both) would turn on light 2.
- For task 7.5 we copy pasted once again, and inserted the logical negation '!' in front of both the first and second arguments in the if statement, and we replaced the if statement's logical operator with '!=' or 'Not equals'. This created the desired 'Exclusive OR' for LED 3 (Green), in which it only came on if one button or the other was pressed, but not if both were pressed. We also updated the output in the same way we did in 7.4, by replacing this time both instances of '(1 << PB2)' with '(1<<PB3)'.