Computer Architecture Midterm – Specification Document

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Goal: to create a circuit out of basic gates to control an LED bike light with four different modes: off, dim, on, and blink, that are cycled through using a button.

Inputs and Outputs: 1 input: button, 1 output: LED

Modes:

Off: The LED is off and no light is being emitted, when the button has been pressed 0 or multiples of 4 times.

Dim: The LED is turning off and on with the clock cycles at 32,768Hz. Since this is significantly too fast for the eye to perceive the LED instead looks dim. This occurs when the button is pressed once following the off mode.

On: The LED is on continuously. This occurs when the button is pressed once following the Dim mode.

Blink: The LED is turning on and off at 2Hz or every half second. This occurs when the button is pressed once following the on mode.