

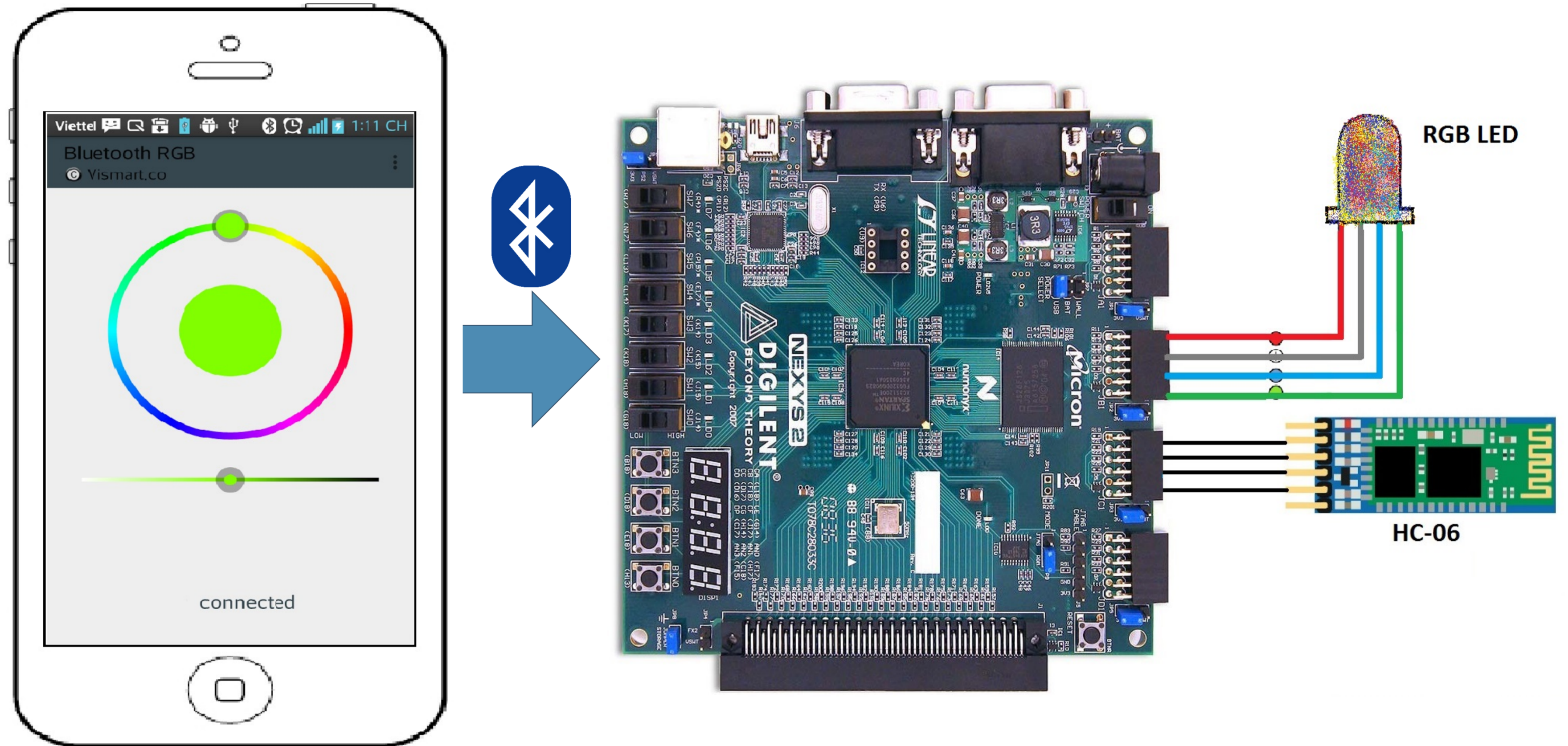
Introduction

Nowadays the usage of smart gadgets are improved and they are expensive. In this project, we aimed to build a prototype for a phone-controlled illumination system, which can replace the expensive smart LEDs on the market.

Future Work

Project can be improved with adding switch control, giving LED fade effect, blinking it with different frequencies, controlling its blinking frequency with potentiometer or controlling multiple RGB LED separately.

System Overview



Smart phone sends the color code, PicoBlaze reads it via Bluetooth, processes it and drives the LED.

Design Methodology

- "Bluetooth RGB LED " application is used in this project.
- Application sends data in the format of «R(0-255)G(0-255)B(0-255)». (i.e. «R255G0B0» means red)
- HC-06 Bluetooth module is used for communication. The module communicates with PicoBlaze via UART.
- HC-06 module is connected to FPGA's JB2, JB3 ports. (RX to JB2 and TX to JB3)
- Received data is parsed to each colors PWM duty cycle values. 0 means %0 duty cycle 255 means %100 duty cycle.
- PWM is generated with verilog PWM module. RGB Led is connected to FPGA's JC1, JC2 and JC3 ports.