# Introduction/Description

This assignment includes 2 main exercises 0.X and 1.X. The 0.X exercises mainly focuses on setting up the STM32 microcontroller. This includes writing to the terminal, uploading code and debugging. The 1.X exercises will get us familiar with using the different parts of the STM32 microcontroller, such as GPIO pins, interrupts and timers. These exercises also focus on documentation which will be shown in this journal.

# Used Pins

A table with a list of buttons

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# Exercises

A screenshot of a computer program

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A computer with a device connected to it

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A screenshot of a computer

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A screenshot of a computer program

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A screenshot of a computer

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Using the debugger it seems like the function goes into the for loop 1 time too many

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So for power of 2 it should only go into the loop once however because I starts at 1 it goes into the loop 2 times which results in it cubing the number instead of squaring. An easy solution would be to remove the <= and making it a <. This fixes this issues. However there is also the issue with negative numbers, this happens because of the usage of int8 which can only reach a maximum value of 128. To fix this a larger data type could be used like uint16 or int16.

A screenshot of a computer program

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This code results in

A screenshot of a computer screen

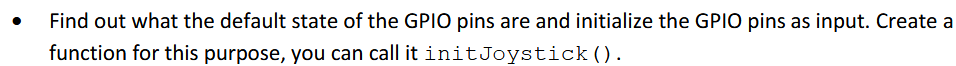
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Which is now correct



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Since we pull the input down its default value is 0 and the code for initializing is shown below

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A screenshot of a computer code

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A screenshot of a computer program

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A screenshot of a computer

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A white paper with black text

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Use the same code from the joystick and now made some for the LED

A screenshot of a computer program

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A screenshot of a computer code

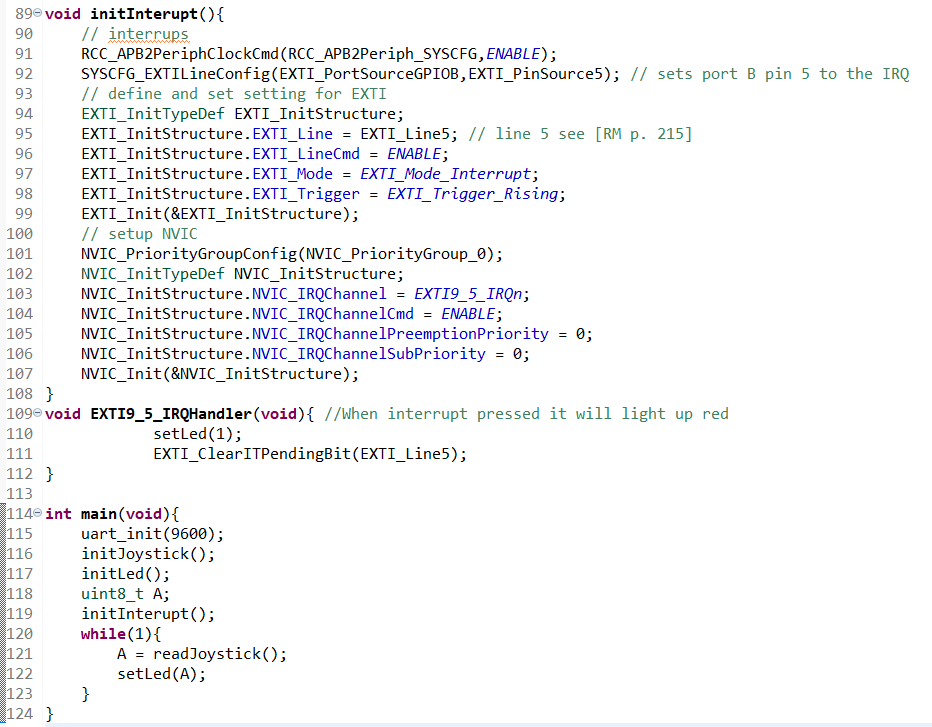
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A screen shot of a computer code

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Same program for joystick as last time



Made it so that when the center button is pressed the LED will light up red

|  |  |
| --- | --- |
| initInterupt | Intitializes the interrupt |
| Syntax: | void initInterupt(); |
| Parameters: | void |

This function sets up the interrupt with all the required setups for the pins, the sensitivity, priority, trigger etc.

|  |  |
| --- | --- |
| EXTI9\_5\_IRQHandler | Handles the interrupt |
| Syntax: | void EXTI9\_5\_IRQHandler (); |
| Parameters: | void |

Lights up the LED red when the interrupt button is pressed

A screenshot of a computer program

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Made it so that the led will blink every 1/100th of a second and then when the center is pressed it will turn off. A close up of text

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A screen shot of a computer code

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|  |  |
| --- | --- |
| initTimer | Intitializes the timer |
| Syntax: | void initTimer(); |
| Parameters: | void |

This function sets up the timer with all the required setups for the pins, the prescaler, period, clockdivider, clockmode etc.

|  |  |
| --- | --- |
| EXTI9\_5\_IRQHandler | Handles the interrupt |
| Syntax: | void EXTI9\_5\_IRQHandler(); |
| Parameters: | void |

Turns off the timer when the interrupt button is pressed

|  |  |
| --- | --- |
| TIM2\_IRQHandler | Handles the timer |
| Syntax: | void TIM2\_IRQHandler(); |
| Parameters: | void |

Turns on the LED whenever the timer interrupt is activated



A computer code with numbers and symbols

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A black background with white numbers and symbols

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# Block diagram and flowchart

## Interrupt

A black grid with white text

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A diagram of a computer

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## Timer

A diagram of a program

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A diagram of a program

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