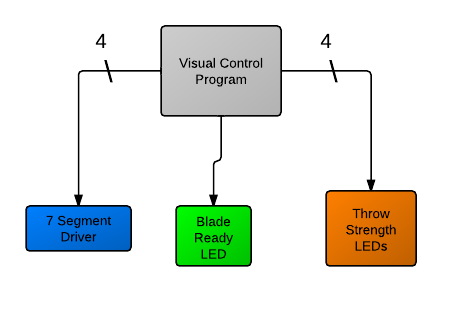
**Guidelines for Prototype Datasheet**

**I Provide a level 1 block diagram, schematic diagram, flowchart, data flow diagram, and/or comprehensive function list of your block.**

* Make sure that ALL arrows on your block diagram are labeled with enough information that someone reviewing your block diagrams is able to measure the signals/data/power represented by each arrow.
* Label all test point positions.
* Make sure instruments do not obscure the schematic.
* Label all inputs and outputs on the schematic with names that are consistent with the tables below.
* If giving a function list, provide the names, descriptions, inputs, and return values of each function.



**II List all software and hardware inputs to your block.**

* State the types of signals and the expected ranges of signals entering your block.
* If you are doing code development provide test inputs used to verify functionality. Provide all function names, a description of each function, input parameters, and each function’s return value.
* You may add more lines to these tables as needed. Please expand message boxes as required for detail.

|  |  |  |
| --- | --- | --- |
| **Input Name** | **Description of Signal** | **Expected Range** |
| Attack switch | Testing switch to simulate a successful attack motion | 0 or 1 |
| Reload switch | Testing switch to simulate a successful reload motion | 0 or 1 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Function Name** | **Description of expected outputs to function** | **Input Parameters** | **Return Value** |
| Test\_cooldown() | Main routine to scroll gauge LEDs and monitor switch inputs. If a switch is pressed, a cooldown will commence | Void | void |

**Provide graphs of time dependent signals at each input in the space below. Make sure the graph is formatted professionally and readable. If your project is code then provide a table of example input values with explanations and recorded test output.**

**III List the outputs to your block.**

* State the types of signals and the expected ranges of signals leaving your block.
* If you are doing code development please use dummy functions as test outputs. Provide all function names, a description of each function, input parameters, and each function’s return value.
* You may add more lines to these tables as needed. Please expand message boxes as required for detail.

|  |  |  |
| --- | --- | --- |
| **Output**  **Name** | **Description of Signal** | **Expected Range** |
| 7-Segment Driver | Binary encoded output to the 7S driver to control the 7S ammo display. | 0-15 |
| Strength Gauge LEDs | Gracefully gauges the strength of a throw. The number of LEDs lit is a ratio of the maximum throw strength | 0-4 |
| Blade Ready LED | Lit when an attack or reload is ready (surpassed its cooldown time). For demo purposes, there is an LED for each function. | 0 or 1 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Function Name** | **Description** | **Input Parameters** | **Return Value** |
| Update\_ammo(char) | Called when a successful attack or reload is conducted and updates ammo counter accordingly. Outputs to 7S driver | 1 increases, 0 decreases, special cases | void |
| Update\_cooldown() | Times attack and reload cooldowns by counting timer 1 overflows. Controls Blade Ready LED | void | Void |
| Update\_strength\_gauge() | Controls strength gauge LED scrolling by counting timer 3 overflows | void | void |

**Provide graphs of time dependent signals at each output in the space below. Make sure the graph is formatted professionally and readable. If your project is code then provide a table of example output values with explanations and recorded test output.**

**IV Signals at test points.**

* State the types of signals at each of the test points of your block. Provide a minimum and maximum range for these signals.
* If you are doing code development please use debug statements to test values. Provide locations and the expected values for each of these statements.
* You may add more lines to these tables as needed. Please expand message boxes as required for detail.

|  |  |  |
| --- | --- | --- |
| **T.P.**  **Name** | **Description of Signal and measurement conditions** | **Range of**  **Values** |
| Gauge LED transistor gate | Tests that power is being given to an LED from VDD by gating a transistor | 0 or 1 |
| 7S Decoder pins | Tests that a constant signal is being output to the 7S driver which corresponds to the amount of ammo | 0 or 1 (x4) |

|  |  |  |
| --- | --- | --- |
| **Debug Location** | **Description of signal and debug statement method** | **Expected outputs.** |
| CLK-OUT | Tests that the internal oscillator is functioning | Noisy 8MHz square wave |
| SCK | Tests that SPI clock is functioning | 2 MHz square wave |
| SDO | Tests that SPI is outputting data correctly | Square wave |
| Tx | Tests that UART is outputting correctly | 9600 baud rate |

**Provide graphs of time dependent signals at each test point in the space below. Make sure the graph is formatted professionally and readable. If your project is code then provide a table of example internal/test values with explanations and recorded test output.**

**TA Scoring Sheet**

Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

TA Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date Demonstrated: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| **Points Awarded** | **What Evaluator is Looking For** | **Possible Points** |
| ######## | **I Diagrams, flowchart, and/or pseudocode** | **15** |
|  | * Level 1 Block diagram | 5 |
|  | * Inputs and outputs and testpoints clearly labeled? | 5 |
|  | * Is diagram sufficiently detailed and correct? | 5 |
| ######## | **II Inputs** | **15** |
|  | * Are all inputs from block diagram and schematic listed and are values backed up by measured data? | 10 |
|  | * Are inputs measured and graphed/tabulated? | 5 |
| ######## | **III Outputs** | **15** |
|  | * Are outputs from block diagram and schematic listed and are values backed up by measured data? | 10 |
|  | * Are outputs measured and graphed/tabulated? | 5 |
| ######## | **IV Test points** | **15** |
|  | * Are test points from block diagram and schematic listed and are values backed up by measured data? | 10 |
|  | * Are “test points” / “dummy function” graphs/ values given in a manner they can be used for system debugging? Software execution times listed? | 5 |
| ######## | **Overall: System Works** | **40** |
|  | Does the system function as it is supposed to? | 20 |
|  | Does the student have a clear path to correct/improve this block? | 10 |
|  | Is the student knowledgeable about their project? | 10 |
| **\_\_\_\_\_/100** | **Overall Evaluation** | **100** |

Comments: