**ECE 385**

**Project Proposal Form**

After ensuring that your project idea is unique, you will use this form to describe your project (point form acceptable), assess its difficulty, and outline what you expect to achieve each week of your project work. You **must give the filled form to your TA at the beginning of the first project lab session.**

The TA will advise you if changes are needed to your project proposal so it is sufficiently, but not overly challenging. After you implement the changes, **the TA will then approve and sign your project proposal.** You will then make **two copies** of the final filled form: one will be held by the TA, and the other one will be for your reference. Your ability to successfully implement all that was approved in your proposal will determine your project functionality marks

# Group Info

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| --- | --- | --- | --- |
| **Station Number** | **First Name** | **Last Name** | **Contribution [0..100]**  **(filled during final lab)** |
| 63 | Steven | Song |  |
| 63 | Yuchen | Wang |  |

# One Sentence Project Description (as posted)

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| Simple VGA battleship game with sound |

# Technical Description of the Project

Describe your project in more technical details and include a system block diagram.

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| Features:   * Fully functional VGA battleship game with sound, which pits a player against a computer-controlled component * Switches on the de1-soc board allow the player to enter inputs   Programming required (for project):   * A significant amount of C code is needed to draw primitives on the VGA display, and more code will be needed to update the VGA pixel buffer(s) on regular intervals   + Code is also needed to read some sounds (e.g wav files of ships exploding) into memory * Assembly code will be required to create interrupts for timers, switch inputs and audio queues   Device usage:   * A timer will be needed to help keep the VGA buffer(s) updated * Switches are needed to get input from the player/user * VGA output will be used to display the battleship board, as well as any prompts for input * An audio codec will be used to output sound (e.g whenever a player sinks a ship, misses a shot, etc) |

# Assessment of Project’s Difficulty

Please check off each accomplishment you propose in your project and indicate whether that accomplishment was interrupt-driven (if applicable). For accomplishments with multiple units such as the LEDs, switches, motors, etc., indicate the number of such units used. For example if you are using two Lego motors place the number 2 in the column instead of a checkmark.

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| --- | --- | --- | --- |
| **Accomplishment** | **Proposed?** | **Interrupt?** | **Demonstrated?**  **(to be filled by your TA)** |
| LEDs/Switches | X | N/A |  |
| Push buttons |  |  |  |
| Digital protoboard |  |  |  |
| VGA | X | N/A |  |
| LCD |  | N/A |  |
| Custom random number generator |  | N/A |  |
| Lego motors |  | N/A |  |
| Lego sensors |  |  |  |
| Linking C with assembly | X | N/A |  |
| JTAG UART transmit |  |  |  |
| JTAG UART receive |  |  |  |
| Timer 0 | X | Yes |  |
| Timer 1 |  |  |  |
| Hexkeypad (rows or columns only) |  |  |  |
| Hexkeypad (rows and columns) |  |  |  |
| RS-232 UART transmit |  |  |  |
| RS-232 UART receive |  |  |  |
| DMA transfer |  |  |  |
| Nios II Custom Instruction |  | N/A |  |
| Audio Codec output to speakers | X | Yes |  |
| Audio Codec input from microphone |  |  |  |
| PS/2 Keyboard |  |  |  |
| PS/2 Mouse |  |  |  |
| SD Card Reader |  |  |  |
| Custom Bus Component |  |  |  |
| Ethernet |  |  |  |

Please describe any other devices or complex software algorithms you will use. Remember to keep this relevant to ECE385 (not fancy electronic circuits or complex mechanical systems).

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# Project Milestones

Describe what parts of your project you will have fully implemented in each of the three project lab sessions. Keep in mind that you will have to demonstrate your project during the third project lab session. The key here is to design incrementally: get something working quickly and keep adding to it. TAs will not accept the “integrate everything in week 3” approach.

## First project lab session

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| -Basic VGA output |

## Second project lab session

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| -Interrupts  -Switch input  -Fully implemented VGA output |

## Third project lab session

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| -Audio codec |

# TA Notes

Final pages are filled by your TA.

## Approval

Approved by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## First project lab session (the week of March 19)

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## Second project lab session (the week of April 2)

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## Third project lab session (the week of April 9) – Demo

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## Notes on Final Result

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# Extra Notes