

**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 be ready to discuss the filled form with your instructor or TA at the beginning of the first project lab session.

We will advise you if changes are needed to your project proposal so it is sufficiently, but not overly, challenging. After you implement the changes, we will then approve your project proposal. You will then make two copies of the final filled form: one will be held by us, 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**

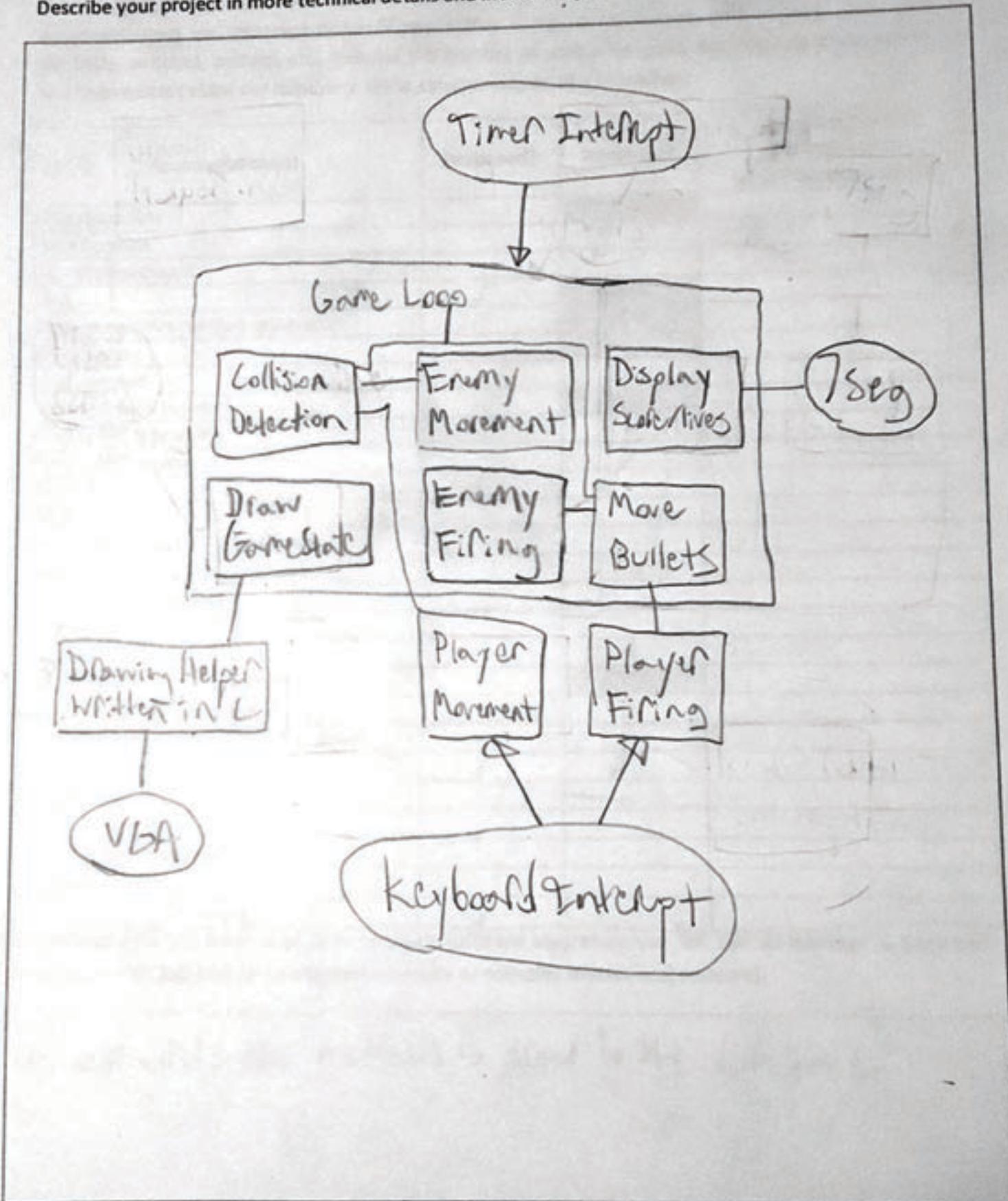
Station Number	First Name	Last Name	Contribution [0..100] (filled during final lab)
94	James	Hooks	
	David	Stumm	

**One Sentence Project Description (as posted)**

Space Invaders with VGA graphics, PS/2 keyboard control, game loop on a timer and score/lives on 7 seg.

## Technical Description of the Project

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



## 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.

Accomplishment	Proposed?	Interrupt?	Demonstrated? (to be filled by your instructor or TA)
LEDs/Switches		N/A	
Push buttons			
Digital protoboard			
VGA	✓	N/A	
Custom random number generator		N/A	
Lego motors		N/A	
Lego sensors			
Linking C with assembly		N/A	
JTAG UART transmit			
JTAG UART receive			
Timer 0	✓	✓	
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			
Audio Codec input from microphone			
PS/2 Keyboard	✓	✓	
PS/2 Mouse			
SD Card Reader			
Custom Bus Component			
Ethernet			

*7 Seg*  
Please describe any other devices or complex software algorithms you will use. Remember to keep this relevant to CSC385 (not fancy electronic circuits or complex mechanical systems).

We will write the methods to draw to the VGA in C

## Project Milestones

Describe what parts of your project you will have fully implemented in each of the project lab sessions. Keep in mind that you will have to demonstrate your completed project during the final project lab session. The key here is to design incrementally: get something working quickly, test it, and keep adding to it. We will not accept the "integrate everything the last day" approach.

### First & Second Project Lab Session

Finish proposal

Research and testing devices we plan on using

Drawing methods written in C

Time: interrupt to run game loop

Keyboard interrupt to get player input

### Third Project Lab Session

Player / enemy movement Player moves from keyboard int.  
Enemy moves in game loop

Bullet Firing Array of enemy bullets (fixed size list)

Single player bullet

Shields as bitmap that degrades w/ collision

Collision detection: bullet-enemy, bullet-player, bullet-bullet,  
bullet-shield

### Fourth Project Lab Session

Collision detection continued if needed

Score/life tracking display to 7 seg

Restart game