CSCB58 Project File: Summer 2017  
  
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Project Details  
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Project Title: Road Crosser   
  
Project Description: The player controls a particle (in directions left, right, up, down) spawning from the bottom of the screen. The ultimate goal is to move the controlling particle to the top, while avoiding collisions with other particles that moves on the screen in horizontal directions.  
The number of objects moving at different speeds can be set initially. There’s a score counter which depends on the y position of the player before the game ends. If time permits, we will allow the player to set the number of lives available.

Video URL:  
  
Code URL (please upload a copy of this file to your repository at the end of the project as well, it will  
serve as a useful resource for future development): https://github.com/zhxl0903/CSCB58-Project

Proposal  
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What do you plan to have completed by the end of the first lab session?:   
 - Prototype with basic features (ie: basic movement, particle generation, clock…)

- Memory and Control units should be close to finish by this time.

What do you plan to have completed by the end of the second lab session?:  
 - Complete prototype of the game with most/all features working  
   
What do you plan to have completed by the end of the third lab session?:  
 - Code is completed; final revisions and presentation preparation are finished

-Most of the final testing and touch-ups will be done during this week

What is your backup plan if things don’t work out as planned?  
 - Our backup plan would be to implement the game with just the requiring features   
 (particle allocation, player movement, particle interaction, score), without the additional   
 features such as multiple stages, particle acceleration, etc. implemented.

-We might reduce the number of particles coded depending on the time available

- We might not implement the number of lives feature depending on time available

What hardware will you need beyond the DE2 board   
(be sure to e-mail Brian if it’s anything beyond the basics to make sure thereâ€™s enough to go around)  
  
Motivations  
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How does this project relate to the material covered in CSCB58?:

* The clock is utilized to keep track of particles (which move in a pre-decided manner/pattern depending on ie: beginning location, stage level, etc.) (Clock)
* Rate dividers will be used to control the speed of the particles (3 speed types)
* Each Particle type will be controlled by a control module with an FSM
* Particles are displayed using the VGA module to the monitor (lab 6 part 2)
* Particles’ locations may be saved in memory to be retrieved (lab6 part 1)
* We will keep track of the scores and display them to the HEX Display
* We might allow the user to set the number of lives and number of particles of each type generated which involve building a memory unit to store the corresponding data and controlling it with the control unit.

Why is this project interesting/cool (for CSCB58 students, and for non CSCB58 students?):  
 - It is a simple game that utilizes CSCB58 concepts to create a familiar, straight-forward   
 Game for leisure purposes. In this respect, CSCB58 students will be able to take interest in both playing and learning from the design of this game.  
 - On the implementation of the widely renown game concept, as it is within their   
 Knowledge. Non-CSCB58 students will still be able to take interest, as it is a familiar  
 Game with straight-forward instructions, which does not require much CSCB58 knowledge   
 to play and enjoy. Students may also become interested in this course due to the concepts encapsulated within this game (e.g. inputting using bits, VGA graphics, creating a program from modules, etc.)

Why did you personally choose this project?:

* It seemed like the most enjoyable concept to discuss and develop, while applying much CSCB58 knowledge in its implementation as specified above. Furthermore, the

Previous project, “Why did the chicken cross the road” gave us inspiration, but we felt  
 we could develop a much more interactive, intricate, well-designed program and   
 display to increase its quality. For example, we can use arrays to allow a player controlled number of enemy particles to be generated.

Attributions  
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Provide a complete list of any external resources your project used (attributions should also be included in your  
code).

VGA adapter  
  
Updates  
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Week 1: - Created repo (github for project work, google doc. for proposal) and organized   
 method of communication (Facebook, google hangout).

- Changed project concept from a pac-man alteration to “Crossy road/Why did the   
 chicken cross the road?”

- Drew diagrams, analyzed and discussed on the future implementation of the   
 program

- Development on the project began with the implementation/reuse of modules from previous labs (HEX Decoder, Rate Divider, Random Number Generator, etc.) .

- Memory module has been implemented and tested. Additional testing maybe required.