

# Project Checklist - Asteroids

## Shield Xiao

- **Create a frame generator module**
  - Stores in memory information for 2 complete frames in black and white
  - Displays on the screen 1 frame at a time
  - Whilst storing 1 frame, takes in pixel information for the next frame (1 pixel per clock cycle)
  - To be tested using the line generator module with a dummy beta module which will constantly input 1 line. The line will be displayed constantly on the screen and by changing parameters within the dummy beta module different lines may be drawn
- **Modify frame generator module to implement colour pixels (if time permits)**
  - To be tested using the line generator module with a dummy beta module which will constantly input 1 line. The line will be displayed constantly on the screen and by changing parameters within the dummy beta module different lines may be drawn
- **Create sound effects generator (if time permits)**
  - Generates sound effects upon demand from a selection of 3 Sound effects selection:
    - Asteroid/Bullet Collision
    - Asteroid/Ship Collision
    - Bullet Firing
  - To be tested using the switches on the labkit to simulate requests for sound effects, the sound effect will be audible in the headphones.

## James Verrill

- **Create Line Generator module**
  - Outputs in sequence the pixels on a line using initial co-ordinate and slope information
  - Test using a dummy beta module which outputs specific line information (pre-determined) to the frame generator. The outputted pixels will be displayed on the hex displays and clock cycles simulated using the input buttons so that the data may be seen. Different lines will be simulated by modifying parameters within the dummy beta module.
- **Implement Beta**
  - Implement hardware 32-bit multiply function
  - Implement software 32-bit divide handling
  - Implement memory mapped output ports to interface with the line drawing function and sound effects generator
  - Implement memory mapped input ports to interface with the controller

## Joint

- **Write basic software programs to demonstrate the line drawing function**
  - The test programs to be created are:
    - Stationary Line. The will output a constant stationary line, by changing parameters in the code different lines will be created.
    - Moving Line. A constant line will be moved each frame. By changing parameters in the code different lines will be created and different movement speeds will be demonstrated.
    - Moving Object. A constant object created from several lines will be moved each frame. By changing parameters in the code, different objects may be created and different movement speeds demonstrated.

- **Write a basic asteroids game and compile to run on the beta (if time permits)**
  - Game will be module based and the modules will be distributed as appropriately.
  - The game will be demonstrated to show its successful completion
- **Modify asteroids game to include additional functions (if time permits)**
  - e.g.
    - Alien robots
    - Sound effects
    - Scoring