Fall 2013
CS 529 | Fundamentals of Game Development
Project 1 | Asteroids

Files (submit folder) due
- **Part 1** – Tuesday, September 17, 2013
- 11.55pm

Topics
The assignment will cover the following topics
1. Implement an "Asteroids" game, including:
   a. Building a 2D matrix library
   b. Building a 2D collision library
   c. Building a 2D vector library
   d. Ship movement based on acceleration, velocity (and velocity cap)
   e. Asteroids movement based on velocity
   f. Bullet spawning and movement based on velocity
   g. Collision checking

Goal
The goal of this assignment is to implement a 2D asteroids game, which will include matrix, vector and collision libraries, in addition to the implementation of "physics movement" which will be used to update the positions of the game object instances.

Assignment Submission
- Compress (.zip) the solution folder (Delete the debug/release folders and the .ncb file first), and submit it on distance.digipen.edu.

- Check the course syllabus regarding the naming and submission convention.

Description

I.   Language: C

II.   A start-up application will be provided.

III.   A library will be provided (For part 2), which includes several hardware related functions like initializing/updating and freeing the graphics and input engines.
     a.   Library name: "Alpha_Engine.lib"
     b.   The header files of the "Alpha_Engine.lib" library are included in the solution folder.

IV.   The project is divided into 2 parts
     a.   Part 1: Implement the 2D matrix, collision and vector libraries
     b.   Part 2: Implement the asteroids game

Part 1

I.   Implement the 2D vector library
     a.   Function declarations are found in Vector2D.h
     b.   Implement the functions in Vector2D.c
     c.   Detailed explanations are found in the .h file

II.   Implement the transformation library
     a.   Function declarations are found in Matrix2D.h
     b.   Implement the functions in Matrix2D.c
     c.   Detailed explanations are found in the .h file

III.   Implement the static intersection library
     a.   Function declarations are found in Math2D.h
     b.   Implement the function in Math2D.c
     c.   Detailed explanations are found in the .h file

Part 2

I.   A different project sheet will be provided for Part 2

Finally, each ".c" and ".h" file in your homework should include the following header:

```
/* Start Header --------------------------------------------------------

Copyright (C) 20xx DigiPen Institute of Technology.
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written consent of DigiPen Institute of Technology is prohibited.

File Name:      <put file name here>
Purpose:        <explain the contents of this file>
Language:       <specify language and compiler>
Platform:       <specify compiler version, hardware requirements, operating
systems>
Project:        <specify student login, class, and assignment. For example:
                if foo.boo is in class CS 529 and this file is a part of
                assignment 3, then write: CS529_fooboo_3>
Author:         <provide your name, student login, and student id>
Creation date:  <date on which you created this file>

- End Header ---------------------------------------------------------*/
```