# Independent Study Project – Checkpoint 1

## Purpose

To create a product that engages you and that you would be proud to share to a public audience.

Along the way, you will develop your ability to problem-solve using a variety of strategies, to implement a solution in code, to manage source code using accepted industry practices, and to plan and meet commitments for project milestones.

## Evaluation

As described in January, I am now taking a standards-based approach to evaluating your progress in the course.

What does that mean?

It means that I value the *process* of your work on this ISP as much as your *product.*

It means that I am looking, quite simply, for you to provide evidence of having met the expectations listed.

To that end: using your commits on GitHub, and your posts on Sesame, how would *you* evaluate your progress so far?

You probably will not have yet demonstrated *all* of the expectations, but have you hit some? How often?

For each expectation shown on the following pages:

1. Provide links(s), optionally with brief explanatory text to specific parts of a commit in your source control history
2. Give yourself a 1 to 5 star rating

## Curriculum Expectations

### A1. Data Types and Expressions Demonstrate the ability to use different data types, including one-dimensional arrays, in computer programs;

**A1.1** use constants and variables, including integers, floating points, strings, and Boolean values, correctly in computer programs;

ASCII, Unicode) to internally represent data and store information;

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
| --- |
| <https://github.com/rsgc-gajer/ISP/blob/master/Space%20Invaders%20Revamped/GameScene.swift#L10-L14> |
| Here is a link to the lines in which I used variable to declare the images of sprites and the audio file for when the bullet gets shot out of the player. |

**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

**A1.3** use assignment statements correctly with both arithmetic and string expressions in computer programs;

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
| --- |
| <https://github.com/rsgc-gajer/ISP/blob/master/Space%20Invaders%20Revamped/GameScene.swift#L39-L42> |
| Here I’m assigning the enemy movements: left, down, up and right. Here they move by 50 in each direction for a duration of 1 second. |

**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

**A1.4** demonstrate the ability to use Boolean operators (e.g., AND, OR, NOT), comparison operators (i.e., equal to, not equal to, greater than, less than, greater than or equal to, less than or equal to), arithmetic operators (e.g., addition, subtraction, multiplication, division, exponentiation, parentheses), and order of operations correctly in computer programs;

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
| --- |
| <https://github.com/rsgc-gajer/ISP/blob/master/Space%20Invaders%20Revamped/GameScene.swift#L33-L40> |
| I don’t have Boolean operators yet but I do have comparison operators in almost every single line in my code. Here, I use them to identify such as positioning and name. I use them to declare images, sizes and other things throughout the eniridy of my code. |

**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

**A1.5** describe the structure of one-dimensional arrays and related concepts, including elements, indexes, and bounds;

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
| --- |
| <https://github.com/rsgc-gajer/ISP/blob/master/Space%20Invaders%20Revamped/GameScene.swift#L20-L24> |
| Here is an example of me implementing the background into the game. I declare the boundaries, the position, the image, the size and the z position. |

**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

**A1.6** write programs that declare, initialize, modify, and access one-dimensional arrays.

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
| --- |
|  |
| I currently don’t have any arrays in my code, I plan to implement arrays later on to make my code cleaner |

**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

### A2. Control Structures and Simple Algorithms Demonstrate the ability to use control structures and simple algorithms in computer programs;

**A2.1** write programs that incorporate user input, processing, and screen output;

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
| --- |
| <https://d2mjkw54krpgkk.cloudfront.net/uploads/d8a2913354f34b16817f77c966da55e6/Screen-Shot-2017-04-24-at-80142-PM.png> |
| In this example, the screen outputs a bullet every time the screen is clicked. There is output provided as well stating that the bullet is not hitting the enemy, which updated 60 times a second. When the bullet hits an enemy, it will say “hit”. |

**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

**A2.2** use sequence, selection, and repetition control structures to create programming solutions;

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
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**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

**A2.3** write algorithms with nested structures (e.g., to count elements in an array, calculate a total, find highest or lowest value, or perform a linear search).

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
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**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

### A3. Subprograms Demonstrate the ability to use subprograms within computer programs;

**A3.1** demonstrate the ability to use existing sub-programs (e.g., random number generator, substring, absolute value) within computer programs;

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
| --- |
| <https://github.com/rsgc-gajer/ISP/blob/master/Space%20Invaders%20Revamped/GameScene.swift#L68-L82>  <https://github.com/rsgc-gajer/ISP/blob/master/Space%20Invaders%20Revamped/GameScene.swift#L33-L40> |
| I have created a node that runs through all the enemies spawned into the map, as well as bullets 60 times per second. I’ve given “names” to the enemy and bullet so that everyone that’s spawned in is classified by its image. |

**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

**A3.2** write subprograms (e.g., functions, procedures) that use parameter passing and appropriate variable scope (e.g., local, global), to perform tasks within programs.

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
| --- |
| <https://github.com/rsgc-gajer/ISP/blob/master/Space%20Invaders%20Revamped/GameScene.swift#L85-L98> |
| This function runs the bullet firing animation. It adds the bullet to the scene, declares its size, defines that it should only fire out of the tip of the rocket, and it moves to the end of the screen with a duration of 1 second. |

**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

### A4. Code Maintenance Use proper code maintenance techniques and conventions when creating computer programs.

**A4.1** demonstrate the ability to identify and correct syntax, logic, and run-time errors in computer programs;

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
| --- |
| <https://d2mjkw54krpgkk.cloudfront.net/uploads/0d184aeff5484e3bbf75196e4c13177e/Screen-Shot-2017-04-24-at-73813-PM.png> |
| Here, I simply had the variable name incorrect which declared the name and the image of the enemy. This is the most important variable for the enemy has if it’s different then every other variable for the enemy, then it won’t work. I had it as enemy1 instead of enemy. |

**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

**A4.2** use workplace and professional conventions (e.g., naming, indenting, commenting) correctly to write programs and internal documentation;   
 (also includes use of source control)

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
| --- |
| <https://d2mjkw54krpgkk.cloudfront.net/uploads/dbd411f1d689413fab57f309c1163dde/Screen-Shot-2017-04-24-at-75330-PM.png> |
| When you commit code from Xcode, it updated on github in the blue box here in the image. Mine updates every class as when I complete something or start something, I instantly commit it and state what I need to finish or what I need to do next. |

**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

**A4.3** demonstrate the ability to interpret error messages displayed by programming tools (e.g., compiler, debugging tool), at different times during the software development process (e.g., writing, compilation, testing);

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
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**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

**A4.4** use a tracing technique to understand program flow and to identify and correct logic and run-time errors in computer programs;

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
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**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

**A4.5** demonstrate the ability to validate a program using a full range of test cases.

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
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**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

### B1. Problem-solving Strategies Use a variety of problem-solving strategies to solve different types of problems independently and as part of a team;

**B1.1** use various problem-solving strategies (e.g., stepwise refinement, divide and conquer, working backwards, examples, extreme cases, tables and charts, trial and error) when solving different types of problems;

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
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**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

**B1.2** demonstrate the ability to solve problems independently and as part of a team;

| Evidence: provide link(s) where possible, optionally provide brief explanatory text, add rows as needed |
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|  |

**Overall rating on this standard**: ✩ ✩ ✩ ✩ ✩

## Comments and Proposal for Level of Achievement

Understanding that this is a checkpoint 1/3 of the way into the ISP, and that mastery of all standards is not expected at this point in time, what do you suggest as your current level of achievement? Why?