

Getting Started Guide

Thank you for using CompuScholar's online Computer Science curriculum! This brief guide will explain how to access the system and find related information.

Available Courses

For a list of available CompuScholar courses, please see our Course Overview page: <http://www.compuscholar.com/schools/courses/overview/>

Login Information and Online Delivery

All course material is delivered through an online Learning Management System (LMS). You will receive a username, password and login URL with your access instructions.

Hardware and Software Requirements

The specific hardware and software requirements vary for each course. For more details, please see:

http://learning.compuscholar.com/course_includes/Minimum_Requirements.pdf

Installing 3rd Party Software

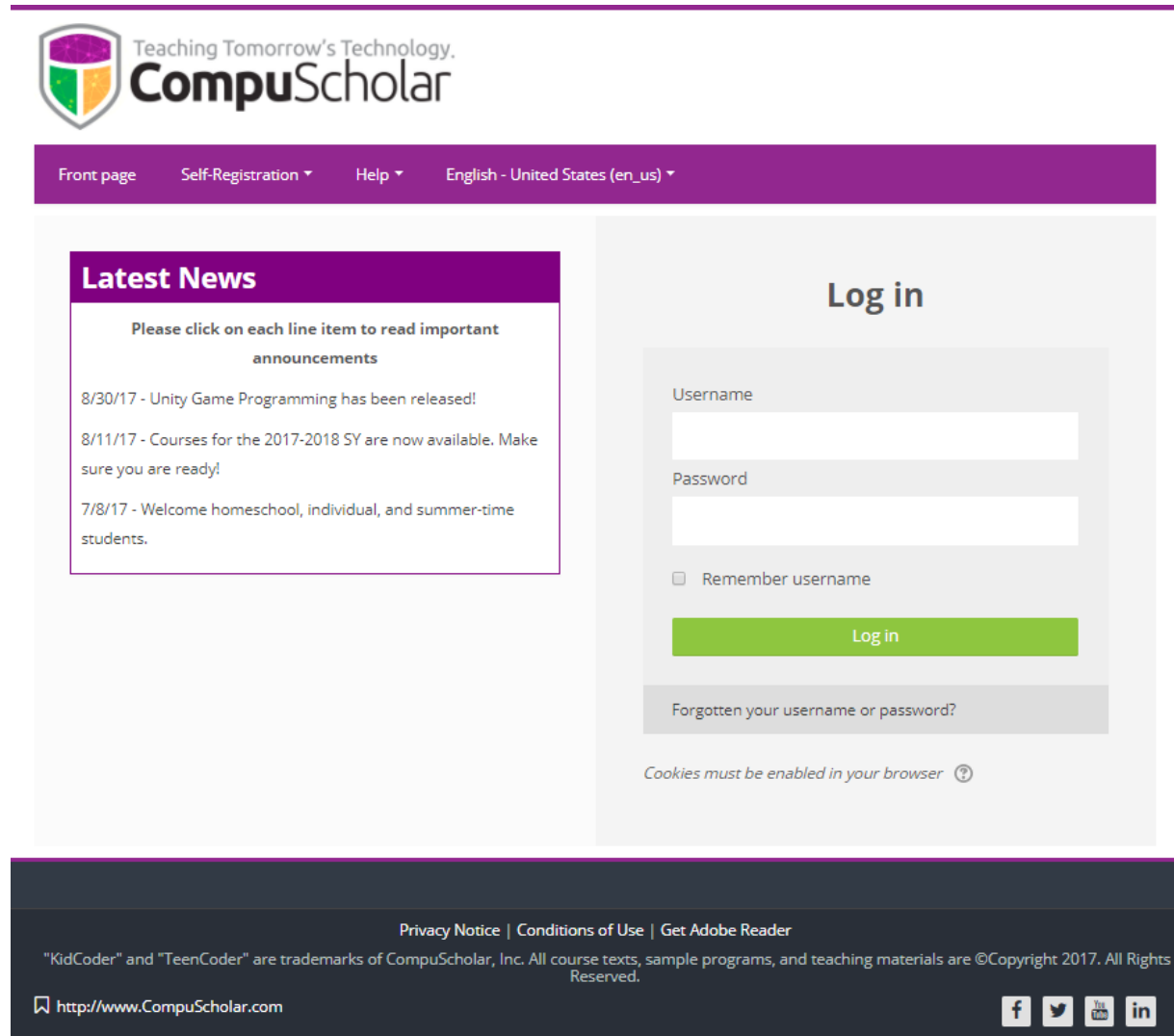
All courses include hands-on programming activities or computing projects! If 3rd party software is required to complete these activities, the course will contain step-by-step download and installation instructions. All 3rd party software is **free** to download and install on any student or teacher computer.

Schools may choose to pre-install 3rd party software on common or shared school computers. Students are also encouraged to install the software at home in order to work outside the classroom. Our online Learning Management System can be accessed from any location by a student or teacher login using a high speed Internet connection.

Login Page

To access course material, please use a HTML5-compliant web browser such as Internet Explorer, Mozilla Firefox, or Google Chrome or Apple Safari. Navigate to the CompuScholar login page provided with your course access instructions.

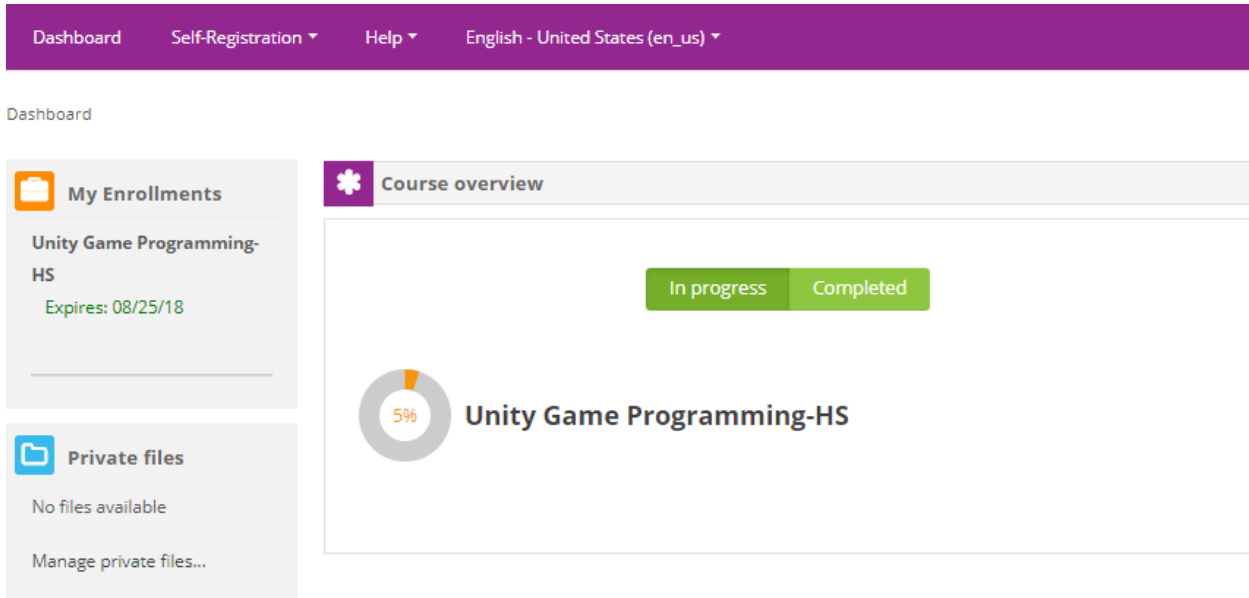
Your login page will look similar to the image below. Type your username and password into the boxes "Log in" panel and click on the "Log in" button to continue.



The screenshot shows the CompuScholar website's login page. At the top left is the CompuScholar logo and name. A purple navigation bar contains links for "Front page", "Self-Registration", "Help", and "English - United States (en_us)". The main content area is split into two columns. The left column has a "Latest News" section with a purple header and a box containing three announcements: "8/30/17 - Unity Game Programming has been released!", "8/11/17 - Courses for the 2017-2018 SY are now available. Make sure you are ready!", and "7/8/17 - Welcome homeschool, individual, and summer-time students." The right column is titled "Log in" and features a form with "Username" and "Password" input fields, a "Remember username" checkbox, a green "Log in" button, and a "Forgotten your username or password?" link. A note at the bottom of the form says "Cookies must be enabled in your browser". The footer is dark blue and contains links for "Privacy Notice", "Conditions of Use", and "Get Adobe Reader", a copyright notice for 2017, the website URL "http://www.CompuScholar.com", and social media icons for Facebook, Twitter, YouTube, and LinkedIn.

Home Page

Once logged in, your Dashboard will display the courses that are assigned to your login.

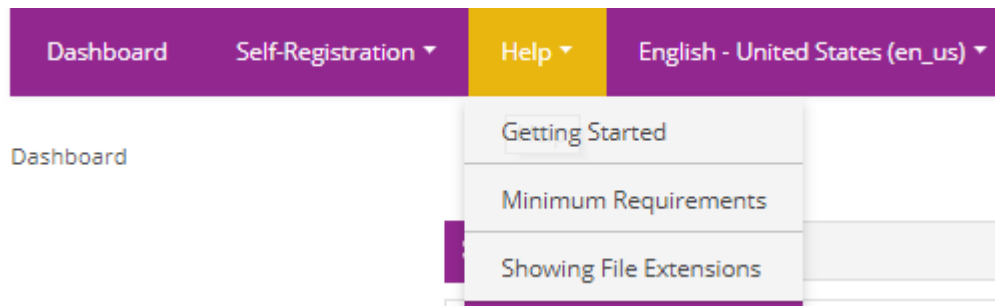


The screenshot shows the CompuScholar dashboard. At the top is a purple navigation bar with links for "Dashboard", "Self-Registration", "Help", and "English - United States (en_us)". Below the navigation bar, the word "Dashboard" is displayed. On the left side, there are two main sections: "My Enrollments" and "Private files". The "My Enrollments" section shows a course titled "Unity Game Programming-HS" with an expiration date of "08/25/18". The "Private files" section indicates "No files available" and provides a link to "Manage private files...". On the right side, there is a "Course overview" section for the selected course. It features a progress indicator with two buttons: "In progress" (highlighted in green) and "Completed". Below this is a donut chart showing 5% completion for the course "Unity Game Programming-HS".

Simply click on the desired course (e.g. "Unity Game Programming") to access that course material.

Online Help, Tutorials and Professional Development

At the top of every course page is a standard toolbar with a “Help” selection.



Within the Help area will be links to useful documents, including the minimum hardware and software requirements.

Within each course you will find a **Teacher Menu** or a **Student Menu** (depending on your role). Both menus contain links to “**Tutorials**” or “**Professional Development**” modules that show students and teachers how to use the online system.

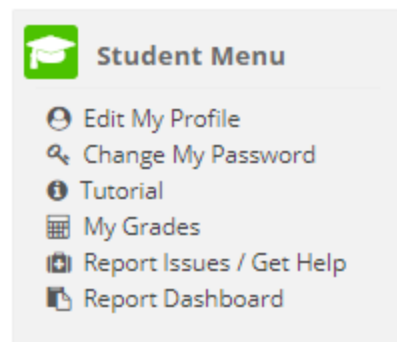
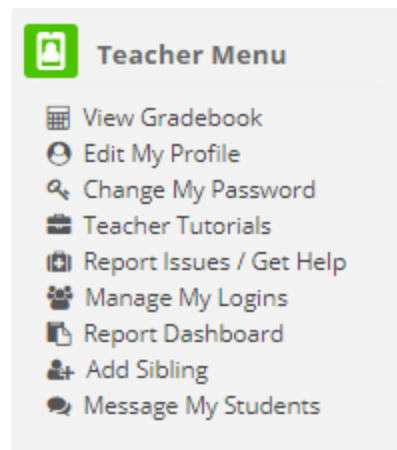
Getting Help

To get help, click on the “Report Issues / Get Help” link, or visit our Support Portal directly at:

<http://support.compuscholar.com> (public/private schools)

Or

<http://homeschoolhelp.compuscholar.com> (homeschool)



Course Home Page

From a course home page, you have access to the individual chapters in the main content area. Click on a chapter heading to access the lessons, activities, quizzes, and tests for that chapter.



Chapter One: Game Engines

What kind of software tools do programmers use to create video games? This chapter will explore the concept of "game engines" and introduce popular Integrated Development Environments (IDEs) used to build games.



Chapter Two: Unity Development Environment

The Unity environment has many powerful features at your fingertips. This chapter begins to describe the Unity IDE and major concepts within the framework.



Chapter Three: Introduction to Scripting

Scripting allows you to create unique game behavior. This chapter introduces the C# language and Unity scripts you will use to program your game objects.




Chapter Four: Simple Movement and Input

Chapter Page

Each chapter generally has 3 or more lessons arranged top-to-bottom. Each lesson will have a “Lesson Video”, “Lesson Text”, and “Lesson Quiz” buttons for the student. Teachers will also have “Teacher Guide” and “Quiz Answer Key” buttons.

Chapter Two: Unity Development Environment

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Your progress 

Lesson One: IDE Basics



Chapter 2, Lesson 1 Video



Chapter 2, Lesson 1 Text



Chapter 2, Lesson 1 Quiz



Chapter 2, Lesson 1 Teacher Guide

Hidden from students



Chapter 2, Lesson 1 Quiz Answer Key

Hidden from students

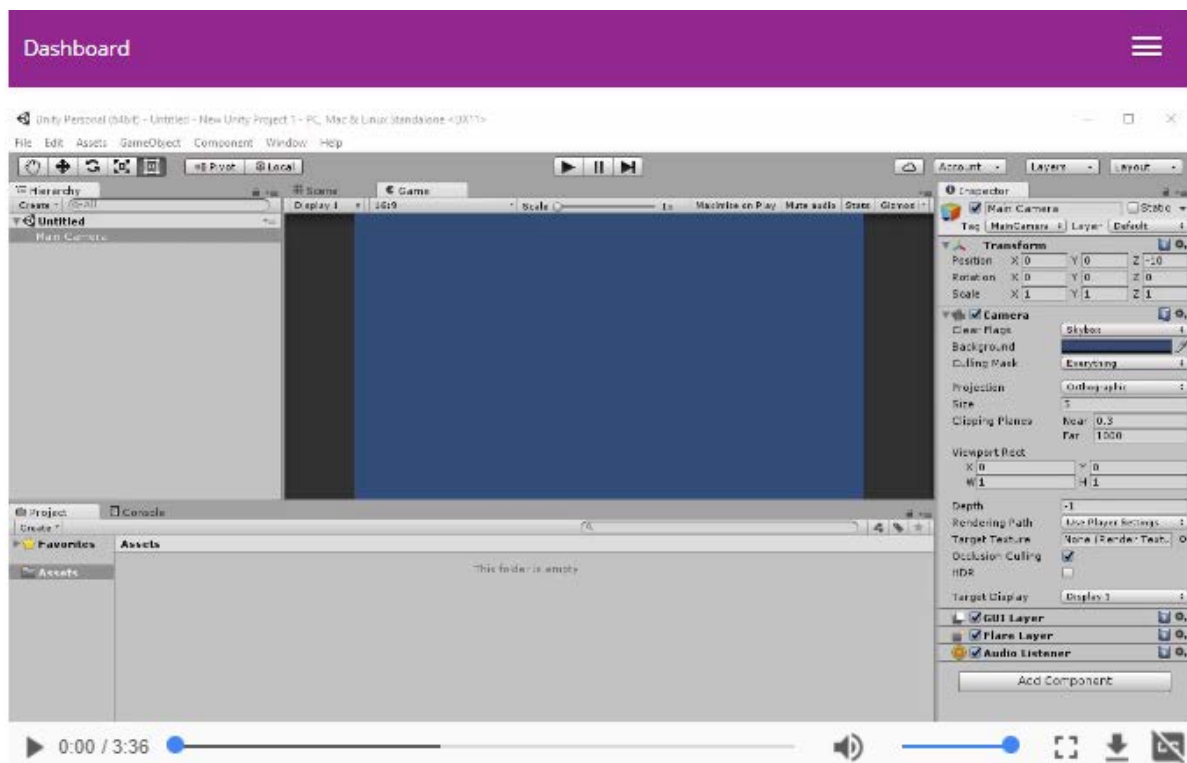


Lesson Two: Unity Concepts

Lesson Videos

Lesson videos are multi-media alternatives to the lesson text. They are optional and do not introduce new concepts, but audio-visual students may find them to be a useful introduction to and re-enforcement of the lesson text.

The videos should play in any HTML5-compliant web browser. When you click on the “Lesson Video” button, a pop-up or tab window will contain the streaming video. The video is animated and narrated, and can be controlled with the slider bar and buttons at the bottom of the screen. Simply close the window or tab when finished.



Last modified: Thursday, August 3, 2017, 1:27 PM

Lesson Text

The "Lesson Text" button will launch the reading material for the lesson in HTML format. The lesson text contains the full detailed explanations and examples for each concept. The Lesson Text is required reading. Simply scroll down to read the full text and close the pop-up window or tab when finished.

Chapter Two: Unity Development Environment

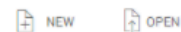
Lesson One: IDE Basics

In this lesson, you are going to learn how to configure and use the basic parts of your Unity IDE. You should have already installed and registered the Unity IDE on your computer. Go ahead and launch the Unity IDE now and follow along, completing each step described below.

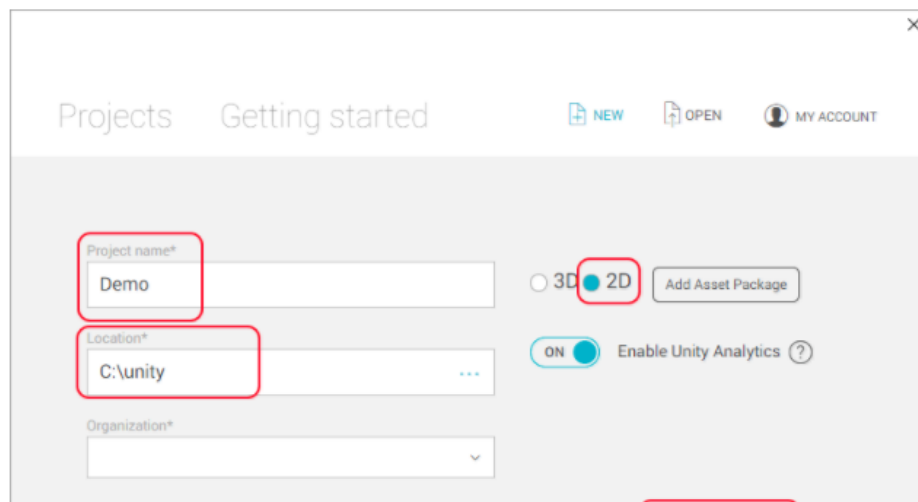
Creating and Loading Projects

A Unity **project** represents one game program. Over time, you will create a number of different projects in Unity. Some projects will hold a few simple concepts for learning purposes, while others will grow to contain full games as you learn new skills.

When you first launch the Unity IDE, you will be presented with a **Projects** window. Near the top-right corner of the screen you will see "**NEW**" and "**OPEN**" icons. From here you can easily create new projects or re-open a saved project.

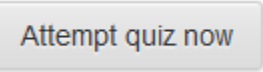


Click on the "NEW" icon to create a new project. You will see a new form that lets you select your project name, location, and 3D / 2D options. You'll need to carefully understand each option!

A screenshot of the Unity IDE's "Projects" window. The window has a title bar with a close button (X). Below the title bar, there are tabs for "Projects" and "Getting started". In the top right corner, there are icons for "NEW", "OPEN", and "MY ACCOUNT". The main area contains a form with the following fields: "Project name*" with the value "Demo"; "Location*" with the value "C:\unity"; and "Organization*" with a dropdown arrow. To the right of the "Project name" field, there are radio buttons for "3D" and "2D" (which is selected), and a button labeled "Add Asset Package". Below the "Location" field, there is a toggle switch for "Enable Unity Analytics" which is turned "ON", and a help icon (?). There are red boxes highlighting the "Project name" field, the "2D" radio button, and the "Location" field.

Lesson Quizzes

Lesson quizzes are generally 5-question multiple choice or similar questions designed to assess the student's understanding of the just-completed lesson. After clicking on "Lesson Quiz" you will be taken to a screen where you can launch the quiz with a button similar to the one shown to the right.



You will then be presented with the quiz questions:

Question 1 Not yet answered Points out of 1.00

How many games can be represented by one Unity project?

Select one:

- a. Two
- b. One
- c. As many as you want.
- d. Up to five.

You can scroll down to the bottom and click the "Next" button to see a summary of answers and submit for grading. When all questions have been answered, click on "Submit all and finish" to complete the quiz.

Teacher Guide

The "Teacher Guide" button is visible only to teachers, and leads to a HTML page containing lesson objectives, suggested classroom discussion questions, and other guidance on conducting the lesson.

Chapter Two: Unity Development Environment

Teacher Notes - Lesson One: IDE Basics

In this lesson, the student will begin learning to navigate through the Unity IDE, configure the tabs and panels and explore the built-in Unity documentation. Students will also observe how projects are stored in the computer's file system.

Lesson Objectives

- Learn how to create a new Unity project or load an existing project
- Understand the location of projects on the computer's hard drive
- Understand the nature of the tabs and panels in the Unity IDE
- Learn about useful tabs such as Hierarchy, Scene, Inspector, and Project
- Learn to configure panels by hiding and showing
- Understand where additional configuration options can be managed
- Learn how to access the built-in Unity "Manual" and "Scripting Reference" documentation

Lesson One: IDE Basics

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Creating and Loading Projects

A Unity **project** represents one game program. Over time, you will create a number of different projects in Unity. Some projects will hold a few simple concepts for learning purposes, while others will grow to contain full games as you learn new skills.


When you first launch the Unity IDE, you will be presented with a **Projects** window. Near the top-right corner of the screen you will see "**NEW**" and "**OPEN**" icons. From here you can easily create new projects or re-open a saved project.

Click on the "NEW" icon to create a new project. You will see a new form that lets you select your project



Activities

Each chapter contains one or more Activities that provide students with hands-on opportunities to exercise their newly learned skills by completing a project. The Activity blocks have an “Activity Instructions” and “Submit Activity” button for the students and an “Activity Solution Guide” for the teacher. Some activities also have an “Activity Files” button which contains material the student should download in order to get started.




Activity: Your First Sprite

 Chapter 2 Activity Instructions


 Flock of Birds Activity

 Chapter 2 Activity Solution Files


Hidden from students


 Chapter 2 Activity Solution Guide

Hidden from students



Chapter Two Exam

 Chapter 2 Exam

 Chapter 2 Exam Answer Key

Hidden from students

At the end of every chapter you will also have a Chapter Test, similar in format to the lesson quizzes. The teacher is provided with a Test Answer Key, which again has the same PDF question and answer-key format as the quizzes.

Activity Instructions

Activities form the heart of the student's hands-on learning experience. Students can access the activity HTML description by clicking on the "Activities Instruction" button.

Chapter Two: Unity Development Environment

Activity: Flock of Birds

In this activity, you will create a new Unity project, add several sprite images to your Assets list, and then create a group of sprites on the screen. You'll also get an opportunity to play with the **Transform** component properties (Position, Rotate, Scale) to see how they control the way your sprites appear in the scene.

How to Complete this Activity

Your goal is to create a scene that shows a variety of bird sprites using different locations, rotations, and scales. Take the following steps to complete this activity:

Adding Image Assets

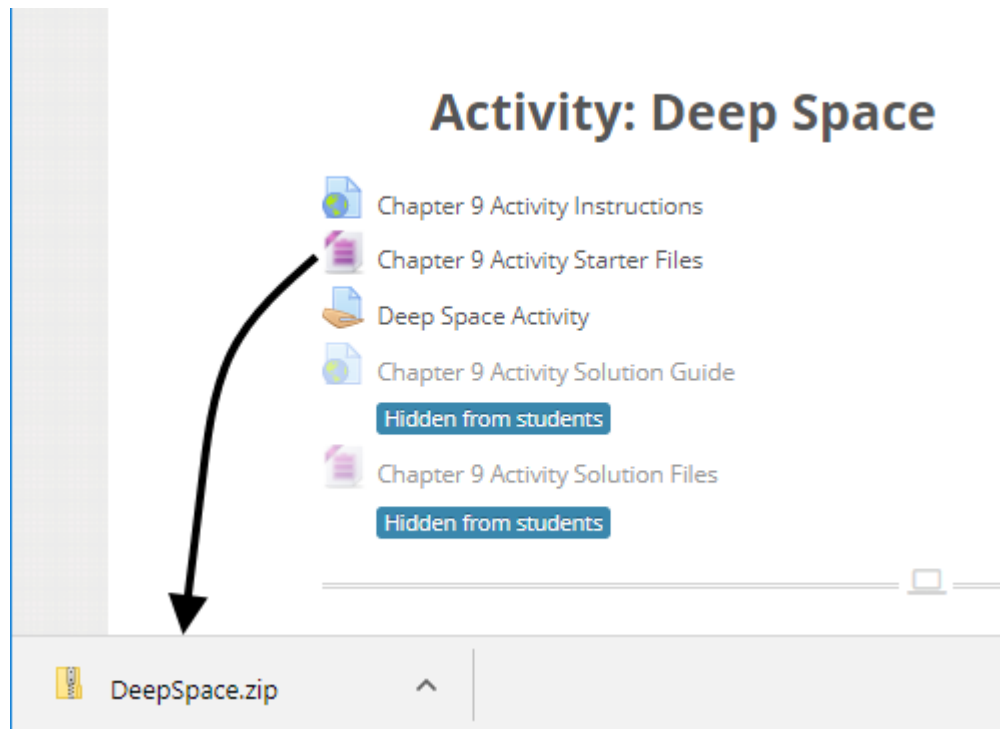
First, you need to create a new Unity project and add some image assets.

- Open the Unity IDE on your computer and create a **new 2D Unity project** named "**Flock**" in your `"/unity"` directory.
- Download each of the 3 bird images below to your `"/unity/Flock/Assets"` folder. Remember, you can right-click on each image in your browser and choose the option to save the image file to your local computer. Use the file names "**bird1.png**", "**bird2.png**", and "**bird3.png**". You can substitute your own creative images if approved by your teacher!



Activity Starter Files and Solution Files

Some activities provide starter files for the student or solution files for the teacher. Most files are provided within ZIPs. Clicking on the “Activity Files” button will start the download process, the details of which will vary depending on your operating system and web browser.



The student ZIP file contains starting material the student will use locally to complete an activity or project. The student should save the file locally and un-zip it to their working area on their computer in order to get started on the activity.

The teachers' solution ZIP files contain a fully coded example of how students can meet the activity requirements.

Submit Activity

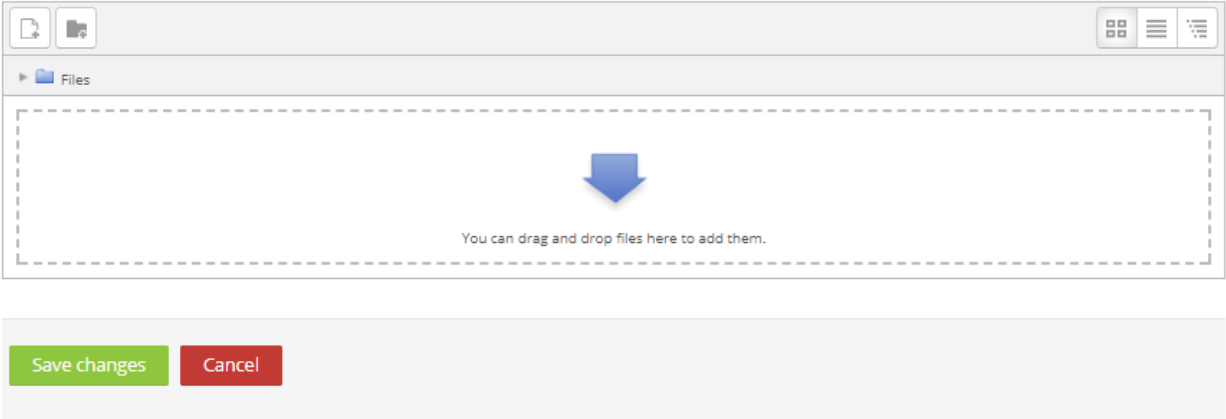
Student work is typically bundled into a ZIP on the local computer and uploaded for teacher review. This can be accomplished by clicking on the “Submit Activity” button and then click “Add Submission”. You will see an area where a file can be uploaded to the system (if you are in a teacher-led classroom).

Homeschool and individual students who are using the course in “self-study” mode will not be able to submit files online – instead projects may be reviewed and graded locally by a parent.

Deep Space Activity

File submissions

Maximum size for new files: 100MB, maximum attachments: 1



The screenshot displays a file upload interface. At the top right, it specifies "Maximum size for new files: 100MB, maximum attachments: 1". Below this is a toolbar with icons for file operations. A breadcrumb "Files" is visible. The main area is a large dashed box containing a blue arrow pointing down and the text "You can drag and drop files here to add them.". At the bottom, there are two buttons: "Save changes" (green) and "Cancel" (red).

Activity Solution Guide

The teacher's "Activity Solution Guide" button will launch an HTML description of the activity solution, which contains fully coded answers for the activity.

Chapter Nine: Object-Oriented Concepts

Activity Solution: Deep Space

In this activity, students will complete the "**DeepSpace**" arcade game. Students will create their own C# object and use another C# object that is given to them. They will also demonstrate how to find and use public properties on other scripts.

Remember, for all Projects

- Whitespace does not have to match our examples, but the code should be well-formatted for easy readability.
- Comments are important and should at least minimally describe the program flow.
- Sprites, scripts and other assets should be neatly organized into Assets sub-folders.

Activity Requirements

The **DeepSpace** activity starter project should be downloaded and used as the basis for new code. Students will need to complete the guided steps listed in the activity instructions.

Students will use the Unity IDE to create a new "**Timer**" script and test the games, but all other work involves C# coding changes. If desired, students can personalize the game by adding more or fewer asteroids and wormholes - just be sure to copy the same components and tags found on the original sprites. Similarly, some "if/else" logic may need to be extended to cover different wormhole names. Student can also rearrange the wormhole entrance and exit positions and adjust the movement speeds of the ship and asteroids.

The four main activity steps should be completed in order. After each step, students should test their code and resolve any problems before moving on to the next step.

Code Required to Complete this Activity

Students will create or modify the **Timer.cs**, **ShipMovement.cs** and **AsteroidMovement.cs** scripts to finish this project. The full scripts are shown below, with student-added code shown in **bold**.

"Timer.cs"

```
/* Timer Object
 * Unity Game Programming
 * CompuScholar, Inc.
```