Purple – Red Belt Unity Updates

March 4th, 2024

Unity Version Updates

What Unity version will be used in the updated Curriculum guides?

The curriculum guides will be using screenshots from the Unity version 2022.3.18f1. Unity continuously updates their platform as a result, the version number will change, but the experience will remain the same and the core version will remain as 2022.3.x LTS. To guarantee compatibility and facilitate a smooth experience for your ninjas, ensure you're using a version labeled 2022.3.x LTS, where "x" represents the specific update version.

What are main differences between Unity 2019 LTS and Unity 2022 LTS?

The largest differences between the 2019 and 2022 LTS versions of Unity are listed below. Many of the updates include cosmetic changes (such as UI layout and how Cinemachine appears when it's imported into a project). As a result, screenshots throughout Purple-Red Belts have been updated to visually represent the changes present in the 2022 LTS Unity version.

- **Cinemachine**: When Cinemachine is imported into a project, it creates a *"Virtual Camera"*, instead of *"CM VCam"*.
- **Package Manager**: The package manager needs to be switched to "Unity Registry" to see all uninstalled packages.
- **TextMeshPro**: TextMeshPro is now installed into Unity Projects by default. A "Legacy" option has been added to the platform, to retain access to the previous TextMesh component and its functionalities.
- **Overall User Interface**: The overall layout of the User Interface has been updated slightly. These changes include the location of the 2D Button, the Play/Pause buttons, and the console/project tabs.
- **Unity Hub User Interface**: The visual layout of the Unity Hub UI has changed completely, but still functions the same. Some of the same buttons have been renamed and relocated.
- **Unity Store**: The Unity Store tab now links to a button that takes the user directly to the Unity Store.

What steps should be taken to update the version of Unity on my location's computers? Can a computer host two versions of Unity?

Access the **Unity Installation Guide** for more information about how to install the 2022.3 (LTS) Unity version onto computers.

Unity Curriculum Updates:

What has been updated across Purple – Red Belts?

Across the three belts, text has been updated to support clarity, fix typos, improve readability, and clarify common bugs. New screenshot images have been added across the belts to reflect the updated 2022.3 LTS User Interface. Consequently, some lines of code have been refactored (to achieve the same result and avoid common bugs) and updated to reflect changes in the Unity version. All three belts will now exist in PDF version based off of a Word document, which should improve legibility, especially for Ninjas who require screen reader accommodations.

What has been updated in Purple Belt?

Text-based chunks of code have been removed from Purple Belt. Instructions that tell Ninjas to add code to scripts will now be present in images only, in order to encourage more active coding by Ninjas.

- **Dropping Bombs**:
  - Greater specification has been added on how to name projects which establishes a good file management practice for Ninjas as they go through the Unity Belts.
  - The Cube is now tagged as a Player and the Reset script was updated to prevent incorrect game resets.
- **Scavenger Hunt**:
  - Fixed lighting issues by resetting the transform component of the directional GameObject. The color property of the light component was changed to white and the intensity property to 1.3 to ensure lighting works correctly.
  - Additional image and text clarification has been added in reference to allowing ninjas to edit images in newer versions of Unity.
- **Meany Bird**:
  - Instructions were added on how to utilize a custom aspect ratio in Unity.
  - A page was added to the manual that details C# syntax to provide more information about the coding language that Ninjas will use.
  - Issues regarding the clarity of where to have code have been resolved with revised clear instructions.

- **Sketch Head**:
    - Instructions on how to change an aspect ratio were added to the manual.
    - Additional image and text clarification has been added in reference to the newer versions of Unity.
    - Instructions were added for setting the X and Y sizes of Box Collider 2D.
    - The Surface Arc of Platform Effector 2D is now set to 90.
    - Further clarification of Use By Effector was provided
- **Don't Touch the Cubes**:
    - The Second Spawner was removed as it was not needed.
    - Additional image and text clarification has been added in reference to the newer versions of Unity.
- **Super Shapes**:
    - Creating a player now uses the default type "circle" instead of creating an empty object and adding a sprite renderer.
    - Shape prefabs are created and edited together, rather than one by one. Additional image and text clarification has been added, in addition to specifying the types of components that the Shape prefabs require.
    - Clarification has been added when storing Prefabs in an array, in addition to demonstrating how to drag each element, one at a time.
    - Information about adding the Rotator component to the camera, if not already present, has been added.
- **PolyRun**:
    - Steps have been reordered and restructured to support a more scaffolded approach to coding in C#.
    - Code to check for the isGrounded variable has been relocated to the appropriate position.
    - Steps have been reorganized so that Ninjas will first create an empty GameObject for the obstacles, then add the squares to it, and create the prefab. Because of this reorganization, some steps have been removed, lowering the number of steps in PolyRun.
    - Time.timeScale = 1 has been added to void Start to fix a common bug when restarting the game.
- **Stack (& Stacks on Stacks)**: These projects have been removed from Purple Belt.
- **Dropping Bombs Part 2**:
    - Added a note that holding Alt no longer removes the original parent but does inherit the scripts. Additional directions have been added to guide the Ninja to separating parent and child game objects.
    - Guidance on where to place the Animation panel has been added.
    - Default Rocket animation has been renamed *RocketIdle*.
    - All animation steps have been updated to not to use the Record button. The Record button isn't needed and can often cause confusion.

- **Dropping Bombs Part 3**:
    - Encourages Ninjas to add variables to a script on their own, before checking their code in a later step. Mentions anticipated bugs in the instructions & how to resolve them in a later step.
    - Refactored code to remove the objectWidth and objectHeight variables form a script, to avoid confusion and achieve the same result.
    - Instructions now use TextMeshPro and include information about how to install it.
    - Score is now added to the Game Manager and Ninjas add a simple score system to the Game Manager. These steps have also been adjusted for Text Mesh Pro.
- **Dropping Bombs Part 4**:
    - A large majority of Dropping Bombs Part 4 is the same.
    - A final step has been added at the end to instruct Ninjas to try and tinker with the particle system to try and challenge themselves.
- **Dropping Bombs Part 5**:
    - Instead of using Hexcode to create the changing text, Dropping Bombs Part 5 now has Ninjas create two public Color variables that they can change in the inspector to set the color of the text. This will allow Ninjas to customize their project in an easier way and also understand how Color variables work.
    - All text in Part 5 has been updated for Text Mesh pro.

What has been updated in Brown Belt?

Across all projects in Brown Belt, a preference has been given to rigidbody movement over transform.Translate(). Substeps have been removed (e.g. instead of steps 2a, 2b, and 2c, they have been made steps 2, 3, and 4). Changes have been made to base packages to fix common bugs/issues.

- **Robomania**:
    - Activity moved to Activity 1 from Activity 6
    - Project redesigned to help demonstrate the difference between transform.Translate and rigidbody.velocity.
    - Crusher1 is moved using transform, Crusher2 is moved using rigidbody and physics.
- **Jungle Escape**:
    - Animate.cs modified to show different parameter types.
    - Animate.cs shortened by simplifying animation structure.
    - Removed artificial gravity change from Jump.cs and instead is modified through changing Unity's rigidbody.
- **Evil Fortress of Dr Worm**:
    - Laser prefab re-designed to allow for easier use from ninjas in Prove Yourself project.
    - Steps added to show ninjas how to add Laser into their game.

- **CyberFu Part 1**:
  - Activity redesigned to de-emphasize vector math and instead focus on using built in Unity methods for the same results. For example, instead of using vector subtraction to get rotation, using Unity's Transform.LookAt() method.
  - Reworked state transitions to reduce redundancies and shorten script.
- **Food Frenzy**:
  - Activity split into 2 parts: Food Frenzy Part 1, and Food Frenzy Part 2.
  - The split occurs after Ninjas have finished the in game UI for part 1, and Part 2 develops the game over screen/level selection.
- **Find the Exit**:
  - Converted from transform.Translate() to rigidbody.velocity to prevent movement bugs and demonstrate the differences.
- **Labyrinth**:
  - Updated for the Unity NavMesh. Navigation menu has moved, and some options have been removed from the Navigation menu and instead placed into a NavMeshSurface component.

What has been updated in Red Belt?

Throughout Red Belt, all instances of "CM VCam" in text and images have been changed to "Virtual Camera". All text usage is updated to text legacy.

In Codey Raceway and Sulky Slimes, steps have been updated to explain concepts, variables, and their uses, in more detail.

Has anything changed in Black Belt?

No additional changes have been made to Black Belt at this time. In the coming weeks, the Education team (and content creators) plan to revise the code documentation present in the guide to reflect the Unity 2022.3 LTS version updates.

Ninja Transition Updates:

Where will the new Curriculum guides (Ninja & Code Sensei) live? How will Ninjas & Code Senseis access the new guides, via Official Docs?

The updated Unity Curriculum guides (Purple, Brown, and Red Belts) will be posted to **Official Docs > Education > CREATE > 00 Unity 2024 Resources**. Ninja guides, Sensei guides, Unity packages, and required assets will all be available in the above Sharepoint folder. The new Unity guides ***will not*** be uploaded to the GDP.

Prior to a Ninja coming to their session, a Code Sensei should access the relevant Curriculum guide via Official Docs and pull it up on the Ninja's computer. At least one Code Sensei from each location should have an **A1** license to access Official Docs.

How will Ninjas submit their projects for grading, with the new Curriculum guides?

Ninjas will continue to save and submit their projects via the GDP for grading. Additional information will be provided in the fall to address how to submit projects once the GDP is sunset.

When should Ninjas transition to using the new guides?

Ninjas should transition to the new Unity curriculum guides upon completion of their current belt. See below for specific examples of when to transition Ninjas:

- **Ninja currently working through Blue Belt (as of March 4th, 2024)**: The Ninja should use the new Purple Belt guide (available via Official Docs) when they complete Blue Belt.
- **Ninja currently working through Purple Belt (as of March 4th, 2024)**: The Ninja should use the new Brown Belt guide (available via Official Docs) when they complete Purple Belt.
- **Ninja currently working through Brown Belt (as of March 4th, 2024)**: The Ninja should use the new Red Belt guide (available via Official Docs) when they complete Brown Belt.
- **Ninja currently working through Red Belt (as of March 4th, 2024)**: The Ninja should use the existing Red and Black Belt guides (available via the GDP). Once the Black Belt Ninja guide has been updated to the 2022.3 LTS version of Unity, it will also be uploaded to Official Docs for Ninja use.