

Unity (Animation, Asset Management, C# Scripting, Gameplay, Programming)

Q1 What can you use to visually distinguish between Play mode and Design mode in the editor?

- A. The object inspector
- B. Handles
- C. Gizmos
- D. Play mode tint**

Q2 A developer executes the C# code below, which finds any game objects tagged as "enemy" in a start event. But the developer notices that, when executed, FindGameObjectsWithTag returns NULL even though the scene contains objects tagged as "Enemy". What is a possible cause?

```
GameObject[] MyEnemies = GameObject.  
FindGameObjectsWithTag ("Enemy");
```

- A. The objects are animated
- B. The objects are on the UI layer
- C. The objects are not named "Enemy"
- D. The objects are deactivated**

Q3 What does this code sample achieve?

```
float Answer = Random.value * 10f;
```

- A. It selects a random number that is less than 10
- B. It selects a random number greater than 10
- C. It selects a random number between 0 and 10**
- D. It selects a random number that is a multiple of 10

Q4 Unity scenes may be saved entirely in the YAML format. Why might you do this?

- A. To reduce scene file size
- B. To externally parse a scene and its objects**
- C. To optimize scene loading and unloading
- D. To improve platform compatibility

Q5 Which visual effects are removed by Orthographic cameras?

- A. Gamma color space
- B. Depth of field**

C. Foreshortening

D. Bloom

Q6 What is Cinemachine Virtual Camera used for?

- A. To override standard scene cameras with cinematic behaviors
- B. To determine what cameras will see when arriving at specific locations
- C. To create predefined camera presets to apply to standard cameras**
- D. To act as dummy cameras for fooling meshes into thinking they are being seen

Q7 What does the Microphone class save captured audio data as?

- A. An MP3 file
- B. A WAV file
- C. An OGG file
- D. An audio clip asset**

Q8 Cinemachine offers tools for building gameplay behaviors. Which component makes spline-based paths for moving objects?

- A. Cinemachine Target Group
- B. Cinemachine Free Look
- C. Cinemachine Brain
- D. Cinemachine Smooth Path**

Q9 When building assets like meshes for Unity, which measurement unit is the most suitable to use?

- A. Cubits
- B. Feet
- C. Inches
- D. Meters**

Q10 The Collaborate feature of Unity Teams empowers whom to do what?

- A. Developers to contribute to the Unity source code
- B. Companies to raise money for projects through crowdfunding
- C. Team members to save, share, and sync Unity projects**
- D. Developers to integrate version control systems, like Git, into projects

Q11 The Clear Flags property of the Camera components affects which behavior?

- A. How the camera renders UI objects on top of the scene
 - B. How the camera renders transparent objects by default
 - C. **How the camera renders its background on each frame**
 - D. How the camera occludes background objects
- Q12** What is the *OnAnimatorMove* event on *MonoBehaviour* objects commonly used for?
- A. Detecting when an object moves
 - B. Updating a navigation agent in response to keyframe data
 - C. Replaying an animation when it has been completed
 - D. **Modifying the root motion of an animated object**
- Q13** Which *MonoBehaviour* method runs by default in Editor mode?
- A. OnBecameInvisible
 - B. OnAnimatorMove
 - C. **Reset**
 - D. OnTriggerEnter
- Q14** For the *OnTriggerEnter* function to invoke successfully on a collision between two objects, at least one must have which two components?
- A. A Collider and a MeshRenderer
 - B. A Collider and a MeshFilter
 - C. **A Rigidbody and a Collider**
 - D. A MeshRenderer and a MeshFilter
- Q15** UI elements, such as images and buttons, may be fixed at specific screen positions to build responsive interfaces. Which Unity features help achieve this?
- A. Events and raycasts
 - B. Quaternions and Euler angles
 - C. Opacity and transparency
 - D. **Anchors and pivots**
- Q16** The occlusion map of a material is often a grayscale image with pixels ranging between black and white. What does this map contribute to an object's material?
- A. White pixels reveal the detailed map and black pixels reveal none
 - B. White pixels allow emission, and black pixels allow none
 - C. White pixels receive shadows, and black pixels receive none
 - D. **White pixels receive full indirect illumination, and black pixels receive none**
- Q17** What can you use to organize different game objects into groups inside the Hierarchy panel?
- A. Canvas objects
 - B. Event systems
 - C. **Empty objects**
 - D. Mesh renderers
- Q18** The Project Windows search box can filter the display of assets with text commands. Which command displays only texture assets?
- A. T:mesh
 - B. **T:texture**
 - C. Show textures
 - D. T:model
- Q19** A bullet game object is fired from a weapon and travels quickly through the scene using a *Rigidbody* component. It sometimes passes through solid objects even though they have colliders. What is a reasonable strategy for correcting this?
- A. Expand the collider size of all scene objects and the bullets to detect collisions with better time
 - B. Increase the Fixed Time Step value from the Project Settings dialog to change the frequency of the FixedUpdate event
 - C. **Change the Collision Detection property of the Rigidbody to Continuous Dynamic or Continuous Speculative**
 - D. Enable the IsKinematic property of the Rigidbody
- Q20** Some material types may include normal map textures. What does a normal map achieve?
- A. It programmatically reduces the polycount of your meshes
 - B. It displaces mesh geometry with extrusion and bevels to generate higher-poly versions
 - C. **It creates the appearance of surface detail on mesh-like bumps, dents, and scratches**

- D. It is a level-of-detail system that progressively reduces a mesh's polygons as a scene camera moves farther away from it
- Q21** A *SkinnedMeshRenderer* component is attached automatically by Unity to some mesh objects when they are added to a scene. Which reason best explains why?
- A. **The mesh file contains bones and rig data**
 - B. The game object also features an animator component
 - C. The game object is a Player-Controlled character
 - D. The mesh file contains a humanoid character
- Q22** Which C# attribute can show a private variable in the object inspector?
- A. Range
 - B. HideInInspector
 - C. Serializable
 - D. **SerializedField**
- Q23** What is a technique for optimizing Unity UI elements?
- A. **Group static UI elements on one canvas, and dynamic elements on a separate canvas**
 - B. Position all canvas objects to the world origin
 - C. Group as many UI elements as possible onto only one canvas
 - D. Divide the screen into multiple canvas objects, each sized to a quarter of the screen size
- Q24** What does the C# Space attribute used below achieve?
- ```
[Space(20)]
Public string PlayerName;
```
- A. It inserts 20 space characters as a default value into the string variable below
  - B. It inserts 20 pixels of margin on all edges around the variable inside the Object Inspector
  - C. **It inserts 20 pixels of empty space above the variable inside the Object Inspector**
  - D. It inserts 20 pixels of empty space below the variable inside the Object Inspector
- Q25** Every time you double-click a C# script file from the Project window, Unity prints the message below (or something very similar) to the console. What is a reasonable step in trying to solve this?
- "Cannot start the process because a file name has not been provided"
- A. Search the Project windows for all script files and then rename all of them
  - B. **Set Visual Studio as the code default editor via the External Tools tab of the Preferences menu**
  - C. Ensure you have specified a Play mode tint color from the Colors tab of the Preferences menu
  - D. Select the Script file, and then select Assets > Find references in Scene from the Application menu
- Q26** What are the Console windows useful for?
- A. Viewing and editing text files
  - B. Downloading data packets and asset packages
  - C. Typing and executing command line instructions through a shell interface
  - D. **Identifying errors in your script files and project**
- Q27** Sprite atlas assets, large textures containing many smaller sprites, can be optimized by batching together what?
- A. Sprites that are non-animated
  - B. Sprites that appear together in-game
  - C. **Sprites using the same color palette**
  - D. Sprites of the same dimensions
- Q28** You are making a game where you need to execute your own functions in response to critical animation events for a rigged character. Specifically, there are two events you must handle: when an animation state is entered and when it is exited in the Animator graph. Which class may be used to invoke your code when those two events happen?
- A. AnimatorClipInfo
  - B. **StateMachineBehaviour**
  - C. AnimationInfo
  - D. AnimatorUtility
- Q29** How can you change the unique bundle identifier for a mobile build?

- A. Select Assets>import Package, and then import the Cross-Platform Input Asset Package
- B. Select Windows>Asset Management>Version Control, and then enter an identifier in the Source field
- C. Select File >Build Settings. Then, from the Build dialog box, select Android or iOS, and select the Bundle Identifier from the Compression Method drop-down menu
- D. Select Edit>Project Settings>Player from the menu, and then expand the Other Settings tab**

**Q30** Rigidbody components may be added to objects with colliders to make them affected by physical forces. What does the *IsKinematic* property achieve?

- A. It removes gravity from an object but retains all other forces
- B. It removes all physical forces from the object, except gravity
- C. It converts the object into physical forces that affect other objects
- D. It suspends physical forces on the object, allowing manual transformations**

**Q31** The primary directional light in a scene is linked by default to a procedural scene Skybox. What does the rotation of this light control?

- A. The orientation of the Skybox
- B. The night and day status of the Skybox**
- C. The acoustics of all audio sources
- D. The resolution of the Skybox

**Q32** You can combine quaternions together through which arithmetic operation?

- A. Multiplication**
- B. Division
- C. Addition
- D. Subtraction

**Q33** Which feature generates binary tree data to optimize camera rendering in a scene?

- A. Render textures
- B. Navigation mesh
- C. Profiler

## D. Occlusion Culling

**Q34** How does the Range C# attribute control the interaction behavior of numerical variables in the Object Inspector?

- A. It restricts the variable value using a slider widget**
- B. It validates the variable values through a text box widget
- C. It restricts the variable values using a color picker widget
- D. It presents valid options in a drop-down list

**Q35** What does this code fragment do when attached to a rigged character?

```
public Animator avatar;
public Transform lookAtObj;
void OnAnimatorIK(int layerIndex)
{
 avatar.SetLookAtPosition
 (lookAtObj).position;

 avatar.SetLookAtWeight(1f);
}
```

- A. It blends the character's head animation with a second predefined animation
- B. It makes the character's head face toward the specified target**
- C. It returns the character's head back to a neutral position
- D. It makes a game object face toward the character's head

**Q36** The variable `Transform.forward` is a `Vector3` measured in what?

- A. Local space**
- B. Normal space
- C. Inner space
- D. World space

**Q37** De-lighting is associated with which technology?

- A. Virtual reality
- B. Augmented reality
- C. Motion capture
- D. Photogrammetry**

**Q38** Humanoid character assets, like NPCs and the player character, feature on Avatar object. Which statement best describes its purpose?

- A. Avatars define parameter sets for facial muscle blendshapes
  - B. Avatars facilitate animation retargeting across different humanoid characters**
  - C. Avatars describe how textures map on deforming objects during animation
  - D. Avatars define IK data for animated characters
- Q39** You can perfectly align two mesh objects together at the vertices by using vertex snapping. How do you best access this tool?
- A. Select a mesh object and press the W key over the destination vertex
  - B. Select Edit>Enable Vertex Snap from the menu, and then select your object
  - C. While holding down the C key, click and drag from the source to the destination mesh
  - D. While holding down the V key, click and drag your object from a corner vertex to its destination**
- Q40** Which statement best describes the function `Quaternion.Euler`?
- A. It converts a 3D orientation from radians to a quaternion
  - B. It converts a quaternion into a `Vector3` in which X, Y, and Z are measured in degrees
  - C. It converts a 3D orientation that is measured in degrees into a quaternion**
  - D. It prints a quaternion to a string that shows its X, Y, and Z rotation in degrees
- Q41** What does the `Destroy` function do?
- A. It deactivates the specified game object immediately
  - B. It deletes the specified game object after the current update loop**
  - C. It deletes the specified game object when the application terminates
  - D. It deletes the specified game object immediately
- Q42** You can programmatically control audio effects, like Pitch and Reverb, from C# scripts using which feature of an Audio Mixer asset?
- A. ParamEQ
  - B. Exposed parameters**
  - C. Audio attenuation
  - D. Audio Mixer groups
- Q43** Multiple animations may be mixed together on a single character, selectively on different limbs. Which Mecanim feature supports this?
- A. Mip Maps
  - B. Avatar masks**
  - C. Animation events
  - D. StateMachineBehaviour scripts
- Q44** What does the `PlayableDirector` component allow you to do?
- A. Record a gameplay session to a video file
  - B. Switch between different scene cameras on demand
  - C. Control the playback of a timeline instance in the scene**
  - D. Run multiple functions on different game objects in parallel
- Q45** What does the `Grid` component do?
- A. Generate a grid sprite at world origin
  - B. Helps you move objects to fixed grid increments**
  - C. Generate a grid mesh at the world origin
  - D. Render an isometric grid in the scene during gameplay
- Q46** Timeline sequences can initiate code during an animation using which feature?
- A. `EventSystem`
  - B. markers**
  - C. signals
  - D. packets
- Q47** Which code sample uses C# properties for creating the health functionality?
- A. 

```
public class Health : MonoBehaviour
{
 private float HealthPoints = 100f;

 public float GetHealth()
 {
 return HealthPoints;
 }

 public void SetHealth(float Change)
 {
```

```

 HealthPoints += Change;

 if (HealthPoints <= 0)
 Destroy(gameObject);
 }
}

B. public class Health : MonoBehaviour
{
 public UnityEvent OnHealthChanged;

 private float HealthPoints = 100f;

 public void SetHealth(float Change)
 {
 HealthPoints += Change;
 OnHealthChanged.Invoke();
 }

 public void Die()
 {
 Destroy(gameObject);
 }
}

C. public class Health : MonoBehaviour
{
 public float HealthPoints
 {
 get { return _healthpoints; }
 set
 {
 _healthpoints = value;

 if(_healthpoints <= 0)
 {
 Destroy(gameObject);
 }
 }
 }

 private float _healthpoints = 100f;
}
\\co get set la chon

D. public class Health : MonoBehaviour
{
 public float HealthPoints = 100f;

 private void Update()
 {
 if (HealthPoints <= 0)
 Destroy(gameObject);
 }
}

```

**Q48** Which statement is not true?

- A. Coroutines will continue running on deactivated objects
- B. All component scripts inherit from MonoBehaviour
- C. **Only humanoid characters feature bones**
- D. The Update function is never called automatically while an object is deactivated

**Q49** When is the Reset method of MonoBehaviour invoked automatically?

- A. When a game object moves from one scene to another
- B. **When adding a component to an object or resetting its values in Edit mode**
- C. When a scene begins or is restarted
- D. When the scene begins or restarts for a deactivated game object

**Q50** Which C# attribute allows a class and its methods to run inside the editor during Edit mode?

- A. [Range(0,10)]
- B. [Live]
- C. [RunInEditor]
- D. [ExecuteAlways]

**Q51** The IsPointerOverGameObject static function of the EventSystem class is useful for creating which behaviour?

- A. Identifying which 3D object the cursor is hovering over
- B. Changing the highlight of buttons as the cursor moves over them
- C. **Preventing mouse clicks on game objects behind the UI canvas**
- D. Moving UI elements in sync with the cursor as it drags across the screen

**Q52** Which C# code fragment continuously updates an object's yaw (Y rotation)? *Note: choose B*

- A. transform.localRotation \*= Quaternion.Euler (0f, RotSpeed \* Time.deltaTime, 0f);
- B. transform.Rotate(Vector3.right, RotSpeed \* Time.deltaTime);
- C. transform.RotateAround(Vector3.up, RotSpeed \* Time.deltaTime);
- D. transform.SetParent(null);

**Q53** What can you do to improve the searchability of your project's assets?

- A. Labels**
- B. Tags**
- C. Layers**
- D. Instance IDs**

**Q54** The Y keyboard shortcut activates which in-editor tool?

- A. Hide**
- B. Scale**
- C. Transform**
- D. Rotate**

**Q55** What does the `Input.touchCount` variable represent?

- A. The number of keyboard inputs**
- B. The number of mouse clicks**
- C. The number of touches currently present on the screen**
- D. The number of frame updates**

**Q56** During gameplay, you need to serialize selected variables (data) of all enemies to send over a network for parsing to generate statistics about the current play session. Which Unity class helps convert object data to JSON text format?

- A. XMLSerializer**
- B. BinaryFormatter**
- C. JsonSerializer**
- D. JsonUtility**

**Q57** Which texture format is generally avoided in Unity?

- A. PNG**
- B. GIF**
- C. JPEG**
- D. Uncompressed**