

# Unity 2D Games Developer Interview Questions And Answers Guide.



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# Unity 2D Games Developer Job Interview Preparation Guide.

## Question # 1

Do you know what a vertex shader is, and what a pixel shader is?

### Answer:-

Vertex shader is a script that runs for each vertex of the mesh, allowing the developer to apply transformation matrixes, and other operations, in order to control where this vertex is in the 3D space, and how it will be projected on the screen.

Pixel shader is a script that runs for each fragment (pixel candidate to be rendered) after three vertexes are processed in a mesh's triangle. The developer can use information like the UV / TextureCoords and sample textures in order to control the final color that will be rendered on screen.

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## Question # 2

What is animation State Machine?

### Answer:-

A graph controlling the interaction of Animation States. Each state references an Animation Blend Tree or a single Animation Clip.

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## Question # 3

What is translate DoF?

### Answer:-

The three degrees-of-freedom associated with translation (movement in X,Y & Z) as opposed to rotation.

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## Question # 4

What is retargeting?

### Answer:-

Applying animations created for one model to another.

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## Question # 5

What are asset Components?

### Answer:-

Assets are the models, textures, sounds and all other "content" files from which you make your game.

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## Question # 6

What is strategy?

### Answer:-

Strategy games require the player to take on a leadership role and oversee every detail of the provided scenario(s). Gameplay focuses on strategies and careful planning and resource management in order to win.

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## Question # 7

What is platform?

### Answer:-

Platformers are games in which the player jumps from platform to platform. Game-play generally includes running and jumping.



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### **Question # 8**

Explain me classic Arcade?

**Answer:-**

Classic arcade games refer to games that originally existed on freestanding coin-operated machines, Generally with a pixel art feel and style.

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### **Question # 9**

Explain me arrange the event functions listed below in the order in which they will be invoked when an application is closed:

Update()  
OnGUI()  
Awake()  
OnDisable()  
Start()  
LateUpdate()  
OnEnable()  
OnApplicationQuit()  
OnDestroy()?

**Answer:-**

The correct execution order of these event functions when an application closes is as follows:

- \* Awake()
- \* OnEnable()
- \* Start()
- \* Update()
- \* LateUpdate()
- \* OnGUI()
- \* OnApplicationQuit()
- \* OnDisable()
- \* OnDestroy()

Note: You might be tempted to disagree with the placement of OnApplicationQuit() in the above list, but it is correct which can be verified by logging the order in which call occurs when your application closes.

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### **Question # 10**

What is animation Layer?

**Answer:-**

An Animation Layer contains an Animation State Machine that controls animations of a model or part of it. An example of this is if you have a full-body layer for walking or jumping and a higher layer for upper-body motions such as throwing an object or shooting. The higher layers take precedence for the body parts they control.

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### **Question # 11**

What is inverse Kinematics (IK)?

**Answer:-**

The ability to control the character's body parts based on various objects in the world.

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### **Question # 12**

What is skinning?

**Answer:-**

The process of binding bone joints to the character's mesh or 'skin'. Performed with an external tool, such as Max or Maya.

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### **Question # 13**

What is advergaming?

**Answer:-**

Games developed for advertising purposes.

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### **Question # 14**

Explain me in a few words, what roles the inspector, project and hierarchy panels in the Unity editor have. Which is responsible for referencing the content that will be included in the build process?

**Answer:-**

The inspector panel allows users to modify numeric values (such as position, rotation and scale), drag and drop references of scene objects (like Prefabs, Materials and Game Objects), and others. Also it can show a custom-made UI, created by the user, by using Editor scripts.



The project panel contains files from the file system of the assets folder in the project's root folder. It shows all the available scripts, textures, materials and shaders available for use in the project.

The hierarchy panel shows the current scene structure, with its GameObjects and its children. It also helps users organize them by name and order relative to the GameObject's siblings. Order dependent features, such as UI, make use of this categorization.

The panel responsible for referencing content in the build process is the hierarchy panel. The panel contains references to the objects that exist, or will exist, when the application is executed. When building the project, Unity searches for them in the project panel, and adds them to the bundle.

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### **Question # 15**

Tell me why deferred lighting optimizes scenes with a lot of lights and elements?

#### **Answer:-**

During rendering, each pixel is calculated whether it should be illuminated and receive lighting influence, and this is repeated for each light. After approximately eight repeated calculations for different lights in the scene, the overhead becomes significant.

For large scenes, the number of pixels rendered is usually bigger than the number of pixels in the screen itself.

Deferred Lighting makes the scene render all pixels without illumination (which is fast), and with extra information (at a cost of low overhead), it calculates the illumination step only for the pixels of the screen buffer (which is less than all pixels processed for each element). This technique allow much more light instances in the project.

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### **Question # 16**

What is animator Controller?

#### **Answer:-**

The Animator Controller controls animation through Animation Layers with Animation State Machines and Animation Blend Trees, controlled by Animation Parameters. The same Animator Controller can be referenced by multiple models with Animator components.

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### **Question # 17**

What is TPS?

#### **Answer:-**

'Third Person Shooters' offer players a third person perspective of their character.

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### **Question # 18**

What is racing?

#### **Answer:-**

Racing games involve the player competing in races, generally in vehicles.

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### **Question # 19**

What is adventure?

#### **Answer:-**

Adventure games involve exploration of, and interaction with, the environment as a main facet of gameplay.

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### **Question # 20**

Explain me which of the following examples will run faster?

1000 GameObjects, each with a MonoBehaviour implementing the Update callback.

One GameObject with one MonoBehaviour with an Array of 1000 classes, each implementing a custom Update() callback.

#### **Answer:-**

The correct answer is 2.

The Update callback is called using a C# Reflection, which is significantly slower than calling a function directly. In our example, 1000 GameObjects each with a MonoBehaviour means 1000 Reflection calls per frame.

Creating one MonoBehaviour with one Update, and using this single callback to Update a given number of elements, is a lot faster, due to the direct access to the method.

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### **Question # 21**

What is root Motion?

#### **Answer:-**

Motion of character's root, whether it's controlled by the animation itself or externally.

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### **Question # 22**

What is avatar?



**Answer:-**

An interface for retargeting one skeleton to another.

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**Question # 23**

What are sports?

**Answer:-**

Sports Games emulate traditional physical sports such as basketball and golf.

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**Question # 24**

What is animation Blend Tree?

**Answer:-**

Used for continuous blending between similar Animation Clips based on float Animation Parameters.

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**Question # 25**

What is animation Curves?

**Answer:-**

Curves can be attached to animation clips and controlled by various parameters from the game.

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**Question # 26**

What is RTS?

**Answer:-**

'Real Time Strategy' games are strategy games played in real time.

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**Question # 27**

What is first Person Shooters?

**Answer:-**

Games in which the player has a first-person perspective of their character and generally have a selection of weaponry to use.

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**Question # 28**

Explain me can two GameObjects, each with only an SphereCollider, both set as trigger and raise OnTrigger events?

**Answer:-**

No. Collision events between two objects can only be raised when one of them has a Rigidbody attached to it. This is a common error when implementing applications that use "physics."

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**Question # 29**

What are simulations?

**Answer:-**

Simulation games attempt to realistically mimic conditions of a particular environment or activity.

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**Question # 30**

Explain meshes?

**Answer:-**

At the core of any 3D game are Meshes - objects consisting of triangles, with textures applied.

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**Question # 31**

What is bind-pose?

**Answer:-**

The pose at which the character was modelled.

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**Question # 32**



What is animation Parameters?

**Answer:-**

Used to communicate between scripting and the Animator Controller. Some parameters can be set in scripting and used by the controller, while other parameters are based on Custom Curves in Animation Clips and can be sampled using the scripting API.

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**Question # 33**

Tell me what is human template?

**Answer:-**

A pre-defined bone-mapping. Used for matching bones from FBX files to the Avatar.

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**Question # 34**

Tell me what is fighting?

**Answer:-**

Fighting games involves rendering opponents unconscious or dead by using a number of different moves.

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**Question # 35**

Tell me why Time.deltaTime should be used to make things that depend on time operate correctly?

**Answer:-**

Real time applications, such as games, have a variable FPS. They sometimes run at 60FPS, or when suffering slowdowns, they will run on 40FPS or less.

If you want to change a value from A to B in 1.0 seconds you can't simply increase A by B-A between two frames because frames can run fast or slow, so one frame can have different durations.

The way to correct this is to measure the time taken from frame X to X+1 and increment A, leveraging this change with the frame duration deltaTime by doing  $A += (B-A) * \text{DeltaTime}$ .

When the accumulated DeltaTime reaches 1.0 second, A will have assumed B value.

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**Question # 36**

Basic Unity 2D Games Developer Job Interview Questions:

**Answer:-**

- \* Explain What Is Prefabs In Unity 3d?
- \* Mention What Is The Function Of Inspector In Unity 3d?
- \* What's The Best Game Of All Time And Why?
- \* List Out The Pros And Cons Of Unity 3d?
- \* What Are The Characteristics Of Unity3d?
- \* List Out Some Best Practices For Unity 3d?
- \* How Do You Feel About Crunching?
- \* Explain What A Vertex Shader Is, And What A Pixel Shader Is?
- \* Explain Why Vectors Should Be Normalized When Used To Move An Object?
- \* Explain Why Deferred Lighting Optimizes Scenes With A Lot Of Lights And Elements?
- \* Can Two Gameobjects, Each With Only An Sphercollider, Both Set As Trigger And Raise OnTrigger Events? Explain Your Answer?
- \* Explain What Is An Unity3d File And How Can You Open A Unity3d File?
- \* Explain What Is Fixed Timestep In Unity3d? Why Does Fixed Timestep Setting Affect Game Speed?
- \* Explain, In A Few Words, What Roles The Inspector, Project And Hierarchy Panels In The Unity Editor Have. Which Is Responsible For Referencing The Content That Will Be Included In The Build Process?
- \* Explain Why Time.deltatime Should Be Used To Make Things That Depend On Time Operate Correctly?

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**Question # 37**

What is animator Window?

**Answer:-**

The window where the Animator Controller is visualized and edited.

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**Question # 38**

What is first Person Sneaker?

**Answer:-**

This is a sub-genre of First Person Shooter, where the focus is on stealth rather than combat or shooting.

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**Question # 39**

What is animation Clip?

**Answer:-**



Animation data that can be used for animated characters or simple animations. It is a simple "unit" piece of motion, such as (one specific instance of) "Idle", "Walk" or "Run".

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### **Question # 40**

Explain me RPG?

**Answer:-**

'Role Playing Games' are games in which the player's character has skills and abilities represented by statistics. Gameplay involves the characters exploring and completing quests that build up their statistics and possessions. Can be single or multi-player. Generally there are several roles to choose from, stereotypically: Mage, Warrior and Ranger.

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### **Question # 41**

What is animator Component?

**Answer:-**

Component on a model that animates that model using the Animation system. The component has a reference to an Animator Controller asset that controls the animation.

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### **Question # 42**

What is MMORPG?

**Answer:-**

'Massively Multiplayer Online Role Playing Games' are multi-player role-playing games that enable thousands of players to play in a virtual online world at the same time.

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### **Question # 43**

What is educational/Serious?

**Answer:-**

Educational/serious games are games aimed at teaching, discussing or debating real-world concepts via gameplay.

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### **Question # 44**

Tell us why vectors should be normalized when used to move an object?

**Answer:-**

Normalization makes the vector unit length. It means, for instance, that if you want to move with speed 20.0, multiplying speed \* vector will result in a precise 20.0 units per step. If the vector had a random length, the step would be different than 20.0 units.

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### **Question # 45**

What is puzzle?

**Answer:-**

Puzzle games are games that usually require the player to solve a puzzle such as a maze, logical problem or positioning different pieces together.

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### **Question # 46**

What is MOO?

**Answer:-**

'Multi-User Domain - Object Oriented' is a type of MUD that allows players greater freedom such as creating new objects and character descriptions and programming new verbs.

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### **Question # 47**

What is t-pose?

**Answer:-**

The pose in which the character has their arms straight out to the sides, forming a "T". The required pose for the character to be in, in order to make an Avatar.

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### **Question # 48**

What is avatar Mask?

**Answer:-**

A specification for which body parts to include or exclude for a skeleton. Used in Animation Layers and in the importer.



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### **Question # 49**

What is MUD?

**Answer:-**

'Multi User Dimension' (or 'Multi User Dungeon' or 'Multi-User Domain') is a text-based, game-world on the internet where the players can interact using text commands. Generally RPG games.

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### **Question # 50**

What is muscle definition?

**Answer:-**

This allows you to have more intuitive control over the character's skeleton. When an Avatar is in place, the Animation system works in muscle space, which is more intuitive than bone space.

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### **Question # 51**

Explain what is rigging?

**Answer:-**

The process of building a skeleton hierarchy of bone joints for your mesh. Performed with an external tool, such as Max or Maya.

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### **Question # 52**

What is cubemap Texture?

**Answer:-**

A Cubemap Texture is a collection of six separate square Textures that are put onto the faces of an imaginary cube. Most often they are used to display infinitely faraway reflections on objects, similar to how Skybox displays faraway scenery in the background

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