3D Graphics Interview Questions And Answers Guide.

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3D Graphics Job Interview Preparation Guide.

Question # 1
Write The Properties Of Video Display Devices?

Answer:-
Properties of video display devices are persistence, resolution, and aspect ratio.
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Question # 2
Tell me what is the use of AssetBundle in Unity3D?

Answer:-
AssetBundles are files that can be exported from Unity to contain asset of your choice. AssetBundles are created to simply downloading content to your application.
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Question # 3
Tell us what is Prefabs in Unity 3D?

Answer:-
Prefab in Unity 3D is referred for pre-fabricated object template (Class combining objects and scripts). At design time, a prefab can be dragged from project window into the scene window and added the scene's hierarchy of game objects. If desired the object then can be edited. At the run time, a script can cause a new object instance to be created at a given location or with a given transform set of properties.
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Question # 4
You appear to be overqualified for this position?

Answer:-
Just because this isn't posed as a question, do not accept it as a fact. What is a fact is that despite a concern that you are overqualified, you still were granted an interview. Since interviewers don't like wasting their time, this means they're expecting you to answer this question well enough for them to justify hiring you.
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Question # 5
What Are The Features Of Inkjet Printers?

Answer:-
Features of inkjet printers are
* 1. They can print 2 to 4 pages per minute.
* 2. resolution is about 360d.p.i. Therefore better print quality is achieved.
* 3. The operating cost is very low. The only part that requires replacement is ink cartridge.
* 4. Four colors cyan, yellow, magenta, black are available.
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Question # 6
Write The Important Applications Of Computer Graphic?

Answer:-
Following are the applications of computer graphic
* 1. computer graphics is used in the field of computer aided design.
* 2. It is used to produce illustrations for reports or to generate slide for with projections.
* 3. Computer graphic methods are widely used in both fine are and commercial are applications.
* 4. The artist uses a combination of 3D modeling packages, texture mapping, drawing programs and CAD software.
* 5. In the field of entertainment CG methods are now commonly used in making motion pictures, music videos and television shows.
* 6. Computer-generated models of physical, financial and economic systems are often used as educational aids.
Question # 7
What Is Scaling?
Answer:-
A 2-D rotation is done by repositioning the coordinates along a circular path, in the x-y plane by making an angle with the axes. The transformation is given by:
\[ X = r \cos(q + f) \] and \[ Y = r \sin(q + f). \]

Question # 8
Define Me Circle?
Answer:-
Circle is defined by its center xc, yc and its radius r in user coordinate units. The equation of the circle is \((x-xc)^2 + (y-yc)^2 = r^2.\)

Question # 9
What Is Aspect Ratio?
Answer:-
The ratio of vertical points to the horizontal points necessary to produce length of lines in both directions of the screen is called the Aspect ratio. Usually the aspect ratio is 4:3.

Question # 10
Tell me what is Fixed Timestep in Unity3D? Why does Fixed Timestep setting affect game speed?
Answer:-
Fixed Timestep feature helps to set the system updates at fixed time interval. A queue like mechanism will manage all real-time events that are accumulated between time epochs. If frame-rate drops below some threshold limit set for fixed timestep, then it can affect the game speed.

Question # 11
What is Computer Graphics?
Answer:-
Computer graphics remains one of the most existing and rapidly growing computer fields. Computer graphics maybe defined as a pictorial representation or graphical representation of objects in a computer.

Question # 12
Tell me some best practices for Unity 3D?
Answer:-
* Cache component references: Always cache reference to components you need to use your scripts
* Memory Allocation: Instead of instantiating the new object on the fly, always consider creating and using object pools. It will help to less memory fragmentation and make the garbage collector work less
* Layers and collision matrix: For each new layer, a new column and row are added on the collision matrix. This matrix is responsible for defining interactions between layers
* Raycasts: It enables to fire a ray on a certain direction with a certain length and let you know if it hit something
* Physics 2D 3D: Choose physics engine that suits your game
* Rigidbody: It is an essential component when adding physical interactions between objects
* Fixed Timestep: Fixed timestep value directly impacts the fixedupdate() and physics update rate.

Question # 13
Do you know what Is Rasterization?
Answer:-
The process of determining the appropriate pixels for representing picture or graphics object is known as rasterization.

Question # 14
What Is Resolution?
Answer:-
The maximum number of points that can be displayed without overlap on a CRT is referred to as the resolution.
Tell us important components of Unity 3D?

**Answer:**
Some important Unity 3D components include
* Toolbar: It features several important manipulation tools for the scene and game windows
* Scene View: It is a fully rendered 3D preview of the currently open scene displayed and enables you to add, edit and remove GameObjects
* Hierarchy: It displays a list of every GameObject within the current scene view
* Project Window: In complex games, project window searches for specific game assets as needed. It explores the assets directory for all textures, scripts, models and prefabs used within the project
* Game View: In unity you can view your game and at the same time make changes to your game while you are playing in real time.

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Question # 16
Why do you want to work for this company in 3D Graphics?

**Answer:**
The difficulty of this question is directly proportional to the amount of preparation you did. If you didn't prepare at all, this question is impossible to answer. Demonstrate your knowledge of the company and show the interviewer you did your homework by discussing how the company's vision and mission align with your values. If you do this at all, let alone well, you will be able to succinctly explain why you would rather work for this company than for their competitor.

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Question # 17
What Are The Advantages Of Electrostatic Plotters?

**Answer:**
Following are the advantages of electrostatic plotters-
* 1. They are faster than pen plotters and very high quality printers.
* 2. Recent electrostatic plotters include a scan conversion capability.
* 3. Color electrostatic plotters are available. They make multiple passes over the paper to plot color pictures.

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Question # 18
What Are The Raster And Vector Graphics?

**Answer:**
The Raster and Vector graphics can be explained as-
* RASTER- In computer graphics image, or BITMAP, is a dot matrix data structure representing a generally rectangular grid of pixels or points of color, viewable via a monitor, paper, or other display medium. Raster image are stored in image files with varying formats.
* VECTOR- Vector graphics is the use of geometrical primitives such as points, lines, curves, and shapes or polygon, which are all based on mathematical expressions, to represent image in computer graphics. "Vector", in this context, implies more than a straight line.

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Question # 19
What Is Translation?

**Answer:**
Translation is the process of changing the position of an object in a straight-line path from one coordinate location to another. Every point (x, y) in the object must undergo a displacement to (x', y'). The transformation is: x' = x + tx ; y' = y + ty

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Question # 20
What Is Run Length Encoding?

**Answer:**
Run length encoding is a compression technique used to store the intensity values in the frame buffer, which stores each scan line as a set of integer pairs. One number each pair indicates an intensity value, and second number specifies the number of adjacent pixels on the scan line that are to have that intensity value.

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Question # 21
List Out The Merits And Demerits Of Plasma Panel Display?

**Answer:**
Merits. Refreshing is not required. Produce a very steady image free of Flicker. Less bulky than a CRT. Demerits. Poor resolution of up to 60 d.p.i. It requires complex addressing and wiring. It is costlier than CRT.

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Question # 22
What Is Pix Map?

**Answer:**
Some system has multiple bits per pixel, the frame buffer is often referred to as pix map.

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Question # 23
What Is Bitmap?

Answer:-
Some system has only one bit per pixel; the frame buffer is often referred to as bitmap.
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Question # 24
Name Any Four Input Devices?

Answer:-
Four input devices are keyboard, mouse, image scanners, and trackball.
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Question # 25
Write The Types Of Clipping?

Answer:-
Point clipping, line clipping, area clipping, text clipping and curve clipping.
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Question # 26
Define Me Pixel?

Answer:-
Pixel is shortened forms of picture element. Each screen point is referred to as pixel or pel.
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Question # 27
What Is Frame Buffer?

Answer:-
Picture definition is stored in a memory area called frame buffer or refresh buffer.
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Question # 28
What Is Point In The Computer Graphics System?

Answer:-
The point is a most basic graphical element & is completely defined by a pair of user coordinates (x, y).
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Question # 29
What Are The Two Classifications Of Shear Transformation?

Answer:-
X shear, y shear.
A point (4,3) is rotated counterclockwise by an angle of45. Find the rotation matrix and the resultant point.
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Question # 30
Top 60 3D Graphics Job Interview Questions:

Answer:-
* 1. What is the meaning of the graphics? Name few types of the graphics.
* 2. Can you give few examples of computer graphics?
* 3. Classify applications of computer graphics.
* 4. What do you understand by image processing? Is image processing a subset of computer graphics?
* 5. What do you mean by interactive graphics? What are its advantages?
* 6. What is the conceptual framework for interactive graphics?
* 7. Give few examples of graphics hardware.
* 8. Name few graphics libraries you know about.
* 10. What is vector graphics? How vector graphics are the rendered over the monitor?
* 11. What is raster graphics? Compare it with vector graphics.
* 12. Name few 2D primitives figures you know.
* 13. Write an algorithm to scan convert a circle over the computer screen.
* 14. How is scan conversion of an ellipse different from a circle?
* 15. Explain working of Bresenham Line Plotting algorithm.
* 16. Pour some light over midpoint circle & ellipse algorithms.
* 17. Explain what do you mean by Filling Rectangles?
* 18. Name few algorithms that are used for polygon filling.
* 19. What do you understand by Clipping?
* 20. Name one Line Clipping Algorithm & explain its working.
* 21. How a character can be rendered over the computer screen?
* 22. How a character can be rendered over the computer screen?
* 23. What do you understand by anti-aliasing? What is the advantage of its use?
* 24. What do you understand by Raster-Scan Display Systems?
* 25. Draw the block diagram of the video controller.
* 26. What is the basic principle involved in Random-Scan Displays?
* 27. Compare raster scan display with random scan display.
* 28. What is an aspect ratio?
* 29. What do you mean by pixel density of the screen? What is its unit of measurement?
* 30. Name few input devices for operator interaction.
* 31. What are the Image scanners?
* 32. Explain 2D viewing pipeline. Draw the block diagram.
* 33. What do you understand by geometrical transformation? Name all primitive transformations.
* 34. What is the significance of 2d transformation?
* 35. What do you understand by the homogeneous coordinates system?
* 36. Pour some light over Composition of Transformations.
* 37. Explain window-to-viewport transformation.
* 38. Explain how can you represent transformations using matrices?
* 39. What is the meaning of Projections? What is its significance?
* 40. Name two types of projections.
* 41. Draw the whole hierarchy of projections?
* 42. What do you understand by cabinet view?
* 43. Show me the mathematics of Planar Geometric Projections.
* 44. What does SPHIGS stand for?
* 45. What are Bézier Curves? What are its features?
* 46. What do you mean by quadratic surfaces?
* 47. What do you mean by Ambient Light? How it is different from point source of light?
* 48. What is virtual realism? What are the fundamental difficulties that are faced at the time of virtual realism?
* 49. What is the meaning of Stereopsis?
* 50. What is a hidden surface removal algorithm? Give few examples of it.
* 51. Explain z-buffer algorithm.
* 52. How area subdivision algorithm works?
* 53. Name few hidden surface removal algorithms for Curved Surfaces.
* 54. How illumination & shading change whole game of rendering graphics?
* 55. Explain transparencies & shadows.
* 56. What do you mean by inter-object reflections?
* 57. What are the extended light sources?
* 58. What do you understand by Radiosity Methods?
* 59. How an image can be geometrically transformations of images?
* 60. What is filtering of an image?

**Question # 31**

Strengths and Weaknesses based 3d graphics programmer interview questions:

**Answer:-**

* List five words that describe your character.
* Your greatest weakness in school or at work?
* What would be your ideal working environment?
* Tell me about a time when you successfully handled a situation?
* Tell me about your strengths.

**Question # 32**

Situational 3d graphics programmer interview questions:

**Answer:-**

* What do you think you can bring to this position?
* How do you think you can make a contribution to this company?
* What relevant experience do you have?
* You have not done this sort of job before. How will you succeed?
* What attracted you to this company?
Start with the present and tell why you are well qualified for the position. A short positive response is best. Say something relevant to the objective line in the resume.

**Question # 33**

Competency Based 3d graphics programmer interview questions:

**Answer:-**

* Tell me about an important goal that you set in the past.
* If you were hiring a person for this job, what would you look for?
* What are three positive things your last boss would say about you?
* What are your expectations regarding promotions and salary increases?
* What was the most stressful situation you have faced?
Question # 34
Video based 3d graphics programmer interview questions:

Answer:–
* Where do you see yourself in five years time?
* Situation in which you had to arrive at a compromise.
* What would you say are your strong points?
* What were the responsibilities of your last position?
* How have you changed in the last five years?

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Question # 35
Phone based 3d graphics programmer interview questions:

Answer:–
* What do you feel is the best educational preparation for this career?
* How well did your college experience prepare you for this job?
* What has been your biggest professional disappointment?
* Tell me about yourself.
* When were you most satisfied in your job?

Show that you are willing to take on the necessary job functions. Give an example that relates to the type of position applied for. These 3d graphics programmer interview questions are asked to see if potential employees have critical thinking skills and self-awareness.

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Question # 36
Behavioral 3d graphics programmer interview questions:

Answer:–
* What do you like and dislike about the job we are discussing?
* Tell me about how you worked effectively under pressure.
* What kind of personality do you work best with and why?
* Has anything ever irritated you about people you’ve worked with?
* Give an example of a time you successfully worked on a team.

Never use any adjectives for these sort of 3d graphics programmer interview questions. Say something relevant to the objective line in the resume. Don't stress yourself with the idea of winning or losing.

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Question # 37
Communication skills based 3d graphics programmer interview questions:

Answer:–
* What do you think this position involves.
* Do you have the qualities and skills necessary to succeed in your career?
* What’s most important to you in a new position?
* What major challenges and problems did you face?
* Describe a recent unpopular decision you made.

Talk about specific work related experience for the position you're interviewing for. Emphasize benefits to the company. Start with the present and tell why you are well qualified for the position.

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Question # 38
Basic 3d graphics programmer interview questions:

Answer:–
* Example when you went above and beyond the call of duty.
* Have you done this kind of work before?
* Do you prefer to work independently or on a team?
* How long would you stay with our company?
* Do you think you are overqualified for this position?

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Question # 39
Tell Me What Is Computer Graphics?

Answer:–
The term computer graphics include almost every thing on computer that is not text or sound. It is an art of drawing pictures, lines. charts, etc. using computers with the help of programming. Or we can say that graphics is the representation and manipulation of image data by computer with the help from specialized software and hardware. Graphic designing is done using the various available softwares for computers which can produce the 3D images in the required shape and dimension. Computer graphics help us in getting the real display experiences.

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Question # 40
What Are The Hardware Devices Used For Computer Graphics?

Answer:–
The hardwares devices used for the computer graphics are:

**Input Devices:**
- Keyboard
- Mouse
- Data tablet
- Scanner
- Light pen
- Touch screen
- Joystick

**Output Devices:**
- Raster Devices: CRT, LCD, LED, Plasma screens, Printers
- Vector Devices: Plotters, Oscilloscopes

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**Question # 41**
Tell me what is the function of Inspector in Unity 3D?

**Answer:**
The inspector is a context-sensitive panel, where you can adjust the position, scale and rotation of Game Objects listed in Hierarchy panel.

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**Question # 42**
Tell me in Unity 3D how can you hide gameobject?

**Answer:**
To hide gameobject in Unity 3D, you have to use the code

```csharp
gameObject.transform.SetActive(false);
```

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**Question # 43**
What Is Rotation?

**Answer:**
A 2-D rotation is done by repositioning the coordinates along a circular path, in the x-y plane by making an angle with the axes. The transformation is given by:

\[
X' = r \cos(q + f) \\
Y' = r \sin(q + f)
\]

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**Question # 44**
Where The Video Controller Is Used?

**Answer:**
A special purpose processor, which is used to control the operation of the display device, is known as video controller or display controller.

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**Question # 45**
What Is Filament?

**Answer:**
In the CRT, heat is applied to the cathode by directing a current through a coil of wire, is called filament

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**Question # 46**
Write The Two Techniques For Producing Color Displays With A Crt?

**Answer:**
Beam penetration method, shadow mask method.

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**Question # 47**
Short Notes On Video Controller?

**Answer:**
Video controller is used to control the operation of the display device. A fixed area of the system is reserved for the frame buffer, and the video controller is given direct access to the frame buffer memory.

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**Question # 48**
Tell me what is Unity 3D?

**Answer:**
Unity 3D is a powerful cross-platform and fully integrated development engine which gives out-of-box functionality to create games and other interactive 3D content.
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