

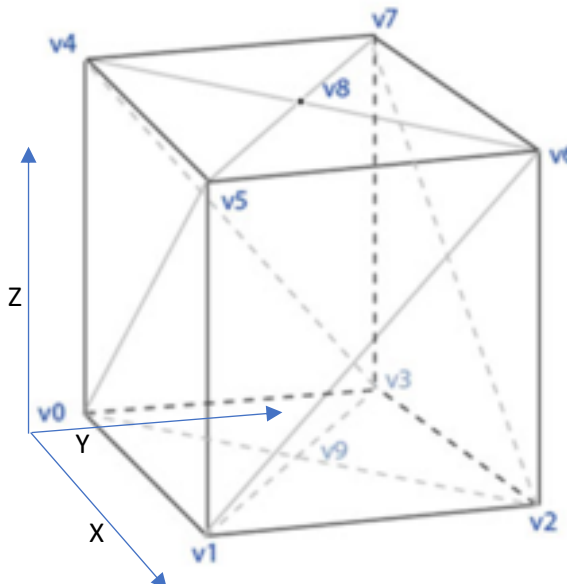


8. He was the one who coined the term augmented reality:
- Ivan Sutherland
 - Jaron Lanier
 - Tom Caudell
 - Hirokazu Kato
9. Reality that helps generate virtual environments in real environments
- Virtual Reality
 - Augmented reality
 - Reality
 - Mixed reality
10. Software that allows you to create 3D models such as gears:
- Blender
 - AutoDesk Maya
 - Autodesk 3DS Max
 - Rhino 3D
11. A 3D model is made up of vertices, edges and
- Blocks
 - Faces
 - Normals
 - Layers
12. What is a feature of ARKit
- World tracking
 - Resolve Occlusion problem
 - Illumination and recognition
 - Face tracking

Write the list of vertex according to the image presented (correct answer is equivalent to 20 points).

13.

Vertex List		
v0	0,0,0	v1 v5 v4 v3 v9
v1	1,0,0	v2 v6 v5 v0 v9
v2	1,1,0	v3 v7 v6 v1 v9
v3	0,1,0	v2 v6 v7 v4 v9
v4	0,0,1	v5 v0 v3 v7 v8
v5	1,0,1	v6 v1 v0 v4 v8
v6	1,1,1	v7 v2 v1 v5 v8
v7	0,1,1	v4 v3 v2 v6 v8
v8	.5,.5,1	v4 v5 v6 v7
v9	.5,.5,0	v0 v1 v2 v3





**INSTITUTO POLITÉCNICO NACIONAL
ESCUELA SUPERIOR DE CÓMPUTO**

Virtual and Augmented Reality
ETS Guide



Underline the correct option (True or False) for the following statements: (each correct answer is worth 5 points):

11. ARCore are not an augmented reality toolkit:
a. True **b. False**
12. *Cybersickness affects everyone and is a virtual reality problem:*
a. True **b. False**
13. Unreal are not a game engine based on the C# language
a. True **b. False**
14. Sensorama used 3D modeling for the user for the first time:
a. True **b. False**
15. Ivan Sutherland invented the first virtual reality glasses:
a. True **b. False**
16. Hololens are not virtual reality headsets:
a. True **b. False**
17. Virtual reality applications are expensive to implement because of the required headsets:
a. True **b. False**
18. Autodesk Maya allows generate Organic Models:
a. False **b. True**
19. Irrlicht was a first game engine
a. False **b. True**
20. ARCore is and Toolkit developed by Apple.
a. False **b. True**

Project

The project that will be developed by the student should be an Augmented Reality or a Virtual Reality application, and should consider all of these points:

VR:

- Developed in Unity with C# scripting.
- Improved to run on Android devices or Oculus Meta Quest 2.
- Use rigidbody, colliders, trigger colliders, raycast, scene loader, and UI.
- Can use 3D models downloaded, but should include at least 3 original models

AR:

- Developed in Unity with C# scripting.
- Can use Vuforia or ARCore toolkits.
- Improved to run on Android devices.
- Use rigidbody, colliders, trigger colliders, raycast, scene loader, and UI.
- Can use 3D models downloaded, but should include at least 3 original models.

Any selected technology should result in an interactive application and not be a videogame or something similar. It should be an application designed to solve a problem, such as simulators, educational tools, medical applications, etc.



The evaluation rubric will be as follows:

- **Exam: 50%**
- **Project: 50%**

The project breaks down as follows:

- **Functional: 50%**
- **Interactive: 30%**
- **Design: 20%**

NOTE: The topics shows here are only a sample, the topics for the exam will be taken from study program.