[](https://www.knowitallninja.com/)Uses of Game Engines

# Task 1

Below is an article by Nvidia that compares Ray Tracing and Rasterization.

https://blogs.nvidia.com/blog/2018/03/19/whats-difference-between-ray-tracing-rasterization/

Read this article and explain the benefits of ray tracing over rasterization.

Ray tracing is better than rasterization because it is used to create incredibly realistic effects on photos and videos, whereas rasterization is used as a way to create 3D objects in 2D screen.

# Task 2

(a) With game physics there are both rigid-body and soft-body dynamics. In the table below, summarise the difference between these two things and provide an example of where they would be used in a video game.

|  |  |  |
| --- | --- | --- |
| Physics | Explanation | Example Use |
| Rigid-Body | **This is where animations for an object are realistic an apply to the laws of physics.** |  |
| Soft-Body | **Soft**-**body** dynamics focus on visually realistic physical simulations of the motion and properties of deformable objects |  |

(b) Research the term “Ragdoll Physics” and summarise your findings below:

Ragdoll physics is a feature that is created, or set, as a way of creating a somewhat realistic death sequence in games; what is meant by this is that the character’s body won’t just fall apart when they die, the body parts will move in sequence with each other and they are tied to a skeletal feature that creates a ‘bone’ in the character that keeps the body parts fixed.

# Task 3

The video linked below explains how collision works in video games.

<https://www.youtube.com/watch?v=z7xMIRzIDpU>

Watch this video and answer the questions below:

1. What is a hitbox?

A region that is created around an object to be used as a way of checking whether another object has hit it (intruded the hitbox)

2. Why do we need hitboxes?

So we can use it a way of creating realistic physics.

3. How do hitboxes allow us to assign different damage when hitting different parts of an enemy?

Because we have created lots of different hit boxes on an object, so whichever hitbox is intruded, amounts for a certain damage.

4. What method do we usually use for collision detection in games?

Shooting games.

# Task 4

What is inverse kinematics and what is forward kinematics? What is the benefit of using inverse kinematics in your game?

Forward Kinematics is when mathematic equations are used to create movement in a robot. They are taken from a plan or some real movement and copied in a game. Inverse kinematics is when the opposite is done, and the robotics moves itself back to its original positioning.