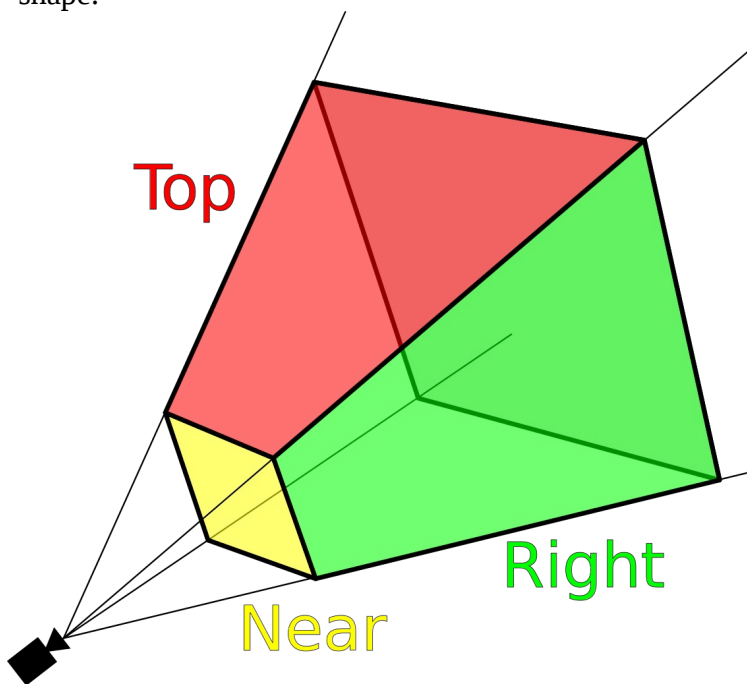


BVH: Bounding volume hierarchy

( <https://cesiumjs.org/2015/08/04/Fast-Hierarchical-Culling/> )

Each node of a tree is associated with a subset of primitives of the objects together with a bounding volume (BV) that encloses this subset with the smallest instance of some specified class of shape.



The fundamental point when we call BVH, we check if one of frustum is visible by the camera, in this case we have three possibilities:

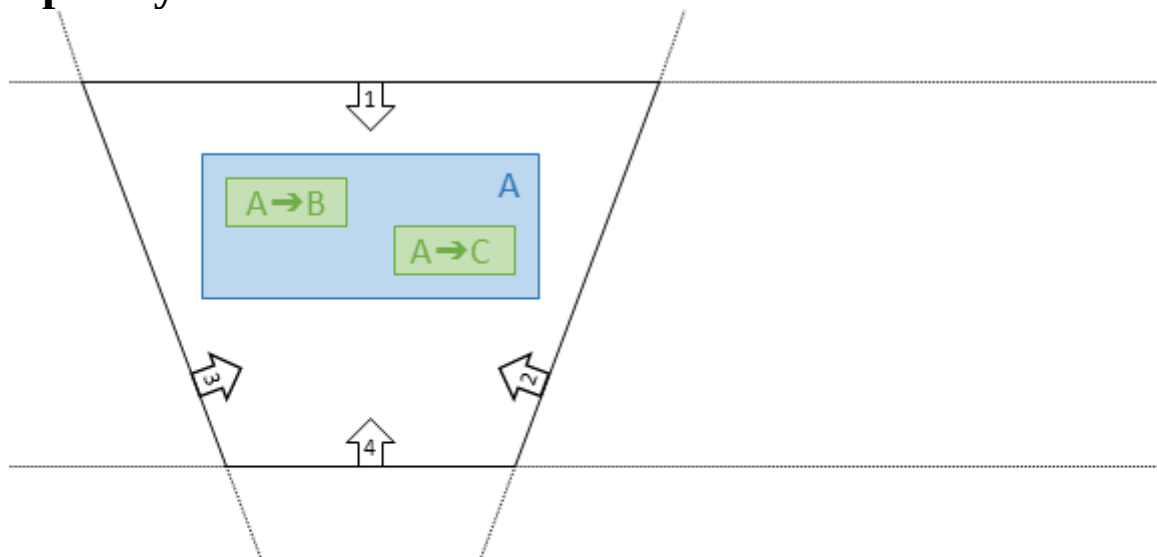
- Completely inside
- Completely outside
- Intersecting

In BVH we have spatial relation that mean every object is in relation of parent or child, the structure allow a tree hierarchy.

The request to explore a node is only for the possibility if intersecting with a frustum for that we explore the node to see the child visible in the camera.

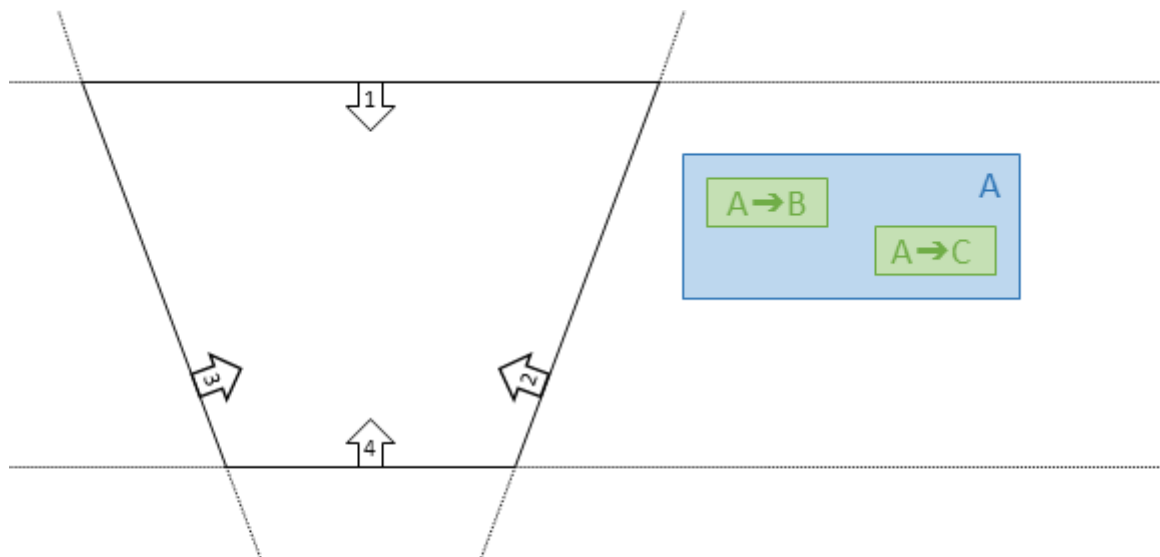
Different possibilities and the solution in BVH

## Completely inside



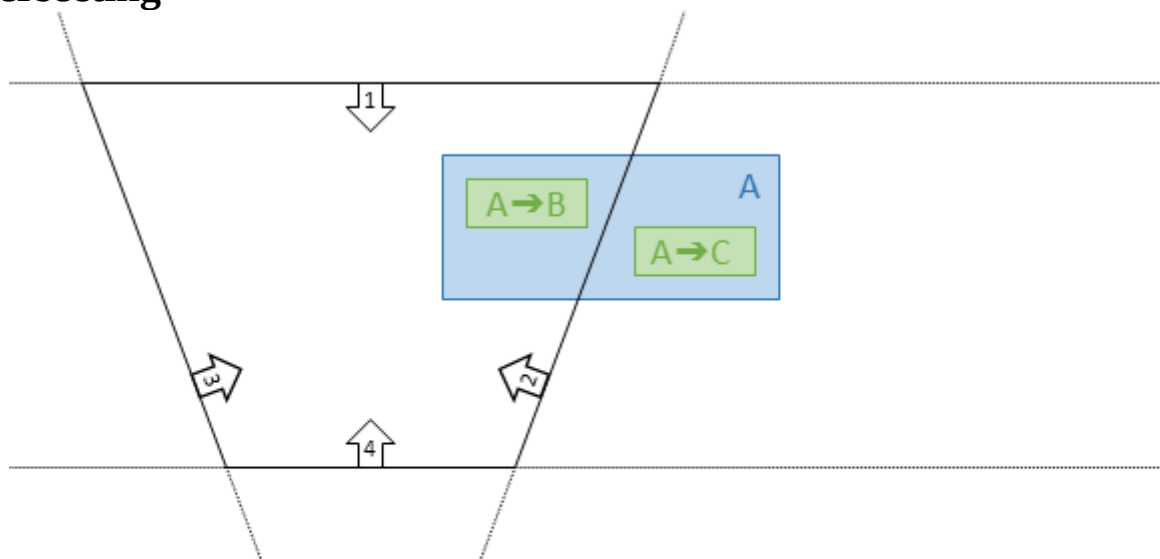
Node	Plane 1	Plane 2	Plane 3	Plane 4	Mask
A	Inside	Intersect	Inside	Inside	0000
A → B	<i>Inside (implicit)</i>	<i>Inside (implicit)</i>	<i>Inside (implicit)</i>	<i>Inside (implicit)</i>	0000
A → C	<i>Inside (implicit)</i>	<i>Inside (implicit)</i>	<i>Inside (implicit)</i>	<i>Inside (implicit)</i>	0000

## Completely outside



Node	Plane 1	Plane 2	Plane 3	Plane 4	Mask
A	Inside	Outside	Inside	Inside	0000
A→B	Don't care	Outside (implicit)	Don't care	Don't care	xxx
A→C	Don't care	Outside (implicit)	Don't care	Don't care	xxx

## Intersecting



Node	Plane 1	Plane 2	Plane 3	Plane 4	Mask
A	Inside	Intersect	Inside	Inside	0100
A→B	Inside (implicit)	Inside (explicit)	Inside (implicit)	Inside (implicit)	0000
A→C	Inside (implicit)	Outside (explicit)	Don't care	Don't care	xxx