Binary Space Partitioning

❓ The point-in-triangle test is a building block of BSP.

Binary Space Partitioning is a space subdivision technique used in computer graphics, computational geometry, and game development to organize objects in space for efficient visibility determination and collision detection.

1. Take a space (2D or 3D)
2. Split it into two halves using a Partitioning Line
3. Recursively split each half
4. Build a Binary Tree where each node represents a partition

```
      [Root: Line AB]
       /          \
[Left of AB]    [Right of AB]
  /    \        /    \
...     ...    ...    ...
```

Historical Context

BSP was famously used in DOOM (1993) and other early 3D games to determine:

- What's visible to the player (visibility sorting)
- Efficient collision detection
- Fast rendering of 3D environments

Why CPP02 EX03 Function is Called BSP

The function `bool bsp(Point, Point, Point, Point)` of CPP02 EX03 does not implement the BSP Algorithm.

It implements a Point-in-triangle Test, which is a fundamental building block of BSP.

The exercise is called "BSP" because:

- It introduces the concept of BSP
- It teaches the most basic geometric operation needed for BSP
- It's a stepping stone toward understanding spatial partitioning