

# Computer Games Exercises: 2024s s08 (non-physics)

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## Answer header

Please put the author information in the header of all code files.

- `name` (Name)
- `coauthor list`

## C04: Triangle intersection

### Preparation

Please read the source code of the "Triangle AABB" game and understand the game logic.

There are 5 buttons corresponding to 5 triangles in different colors. When the game starts or the "Reset" button is pressed, the triangles are randomly located in the space.

### Task

Update the script to implement the following features.

- Construct an axis oriented bounding box (AABB) for each triangle, and display it by dashed lines around the triangle.
- Implement the "Dimension Reduction Collision" algorithm with AABB for the broad phase collision detection.
- Implement the 2D "Triangle-Triangle-Test" algorithm for the narrow phase collision detection.
- When one triangle button is pressed, perform the broad phase collision detection. The face color of any triangle, the AABB of which intersects the AABB of the triangle corresponding to the button, is changed to black.
- When one collision is detected in the broad phase, perform the narrow phase collision detection. The face color of any triangle, which intersects the triangle corresponding to the button, is changed to white.
- When the game starts or the "Reset" button is pressed, no triangle button is pressed.
- Only one triangle button can be pressed at one time.

## Questions

Write the corresponding answers in the script file.

- Please write the complete collision detection pipeline in this task, including the sub-cases in the "Triangle-Triangle-Test".