



Object-Oriented Software Engineering

Practical Software Development using UML and Java

Chapter 10:

Testing and Inspecting to Ensure High Quality

Part 2:

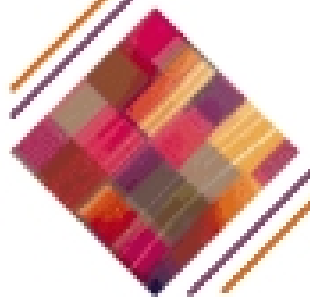
Defects in Ordinary Algorithms

Defects in Handling Stress or Unusual Situations

10.3 Defects in Ordinary Algorithms

Incorrect logical conditions

- *Defect:*
 - The logical conditions that govern looping and if-then-else statements are wrongly formulated.
- *Testing strategy:*
 - Use equivalence class and boundary testing.
 - Consider as an input each variable used in a **rule or logical condition**.
 - Break into smaller, individual logical tests.

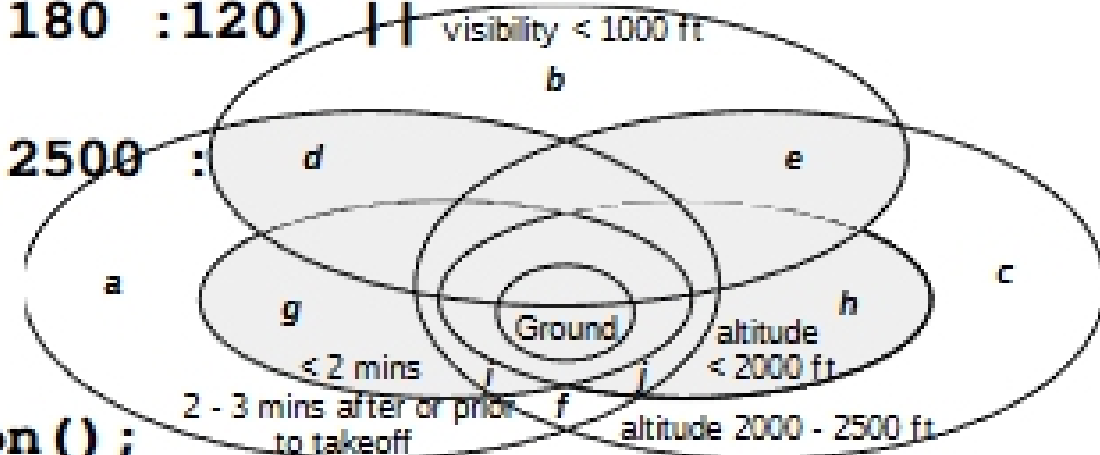


Example of incorrect logical conditions defect

What is the hard-to-find defect in the following code?

- The landing gear must be deployed whenever the plane is within two minutes from landing or takeoff, or within 2000 feet from the ground. If visibility is less than 1000 feet, then the landing gear must be deployed whenever the plane is within three minutes from landing or lower than 2500 feet

```
if (!landingGearDeployed &&  
    (min(now-takeoffTime , estLandTime-now) <  
        (visibility < 1000 ? 180 :120) ||  
        relativeAltitude <  
        (visibility < 1000 ? 2500 :  
        )  
{  
    throw  
        new LandingGearException();  
}
```



Class Exercise! What is the order of evaluation – for starters!!

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