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COIMBATORE-641 035, TAMIL NADU

DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY

Course Code & Name: **23CST201-Object Oriented Programming**

Course Faculty : Ms.K.Kalaivani AP/CST

Puzzles / In Class Activities

Topics Covered: **Unit 4**

Puzzle 1: The Safety Net

Imagine walking on a tightrope high above the ground. A safety net is placed below to catch you if you fall.

Real-time example: In an automotive ECU (Electronic Control Unit), exception handling is like the fail-safe mechanism that prevents a sudden brake failure from causing an accident by switching to limp mode.

Puzzle: Even with a strong safety net (try-catch), why might the performer still get injured?

Puzzle 2: The Fire Alarm System

A building has smoke detectors and fire alarms. When smoke is detected, the alarm rings and sprinklers activate automatically.

Real-time example: In embedded systems, exception handling works like a

watchdog timer that resets the microcontroller if the main program hangs.

Puzzle: Why does the fire alarm (catch block) sometimes fail to activate even when smoke (exception) is present?

Puzzle 3: The Insurance Policy

You buy comprehensive insurance for your car. In case of an accident, the insurance company pays for repairs.

Real-time example: The finally block is like mandatory hospital bills that must be paid regardless of insurance claim approval.

Puzzle: Why must some payments (finally block) be made even if the insurance company denies the claim?

Throws and Throw

Puzzle 1: Passing the Responsibility

A manager finds a critical error in a project but instead of fixing it, he escalates it to the director with a note.

Real-time example: The throws keyword in Java is like a method declaring "I might throw this problem to the caller to handle."

Puzzle: What happens if the director also refuses to handle it?

Puzzle 2: The Red Flag

A referee spots a foul during a match and immediately throws a red card.

Real-time example: The throw keyword is used when a programmer deliberately raises an exception (e.g., throw new IllegalArgumentException()).

Puzzle: Why does throwing a red card stop the game immediately?

Multithreading

Puzzle 1: The Construction Site

Multiple workers are building different parts of a house simultaneously — one does electrical, another plumbing, another painting.

Real-time example: In modern smartphones, multiple threads handle UI rendering, background sync, and music playback at the same time.

Puzzle: Why do the workers sometimes fight over the same toolbox (shared resource)?

Puzzle 2: Traffic Signals

At a busy intersection, traffic lights coordinate so vehicles from different directions don’t collide.

Real-time example: Thread synchronization (using synchronized keyword) works like traffic signals to prevent race conditions.

Puzzle: What happens if all traffic lights turn green at the same time?

Puzzle 3: The Relay Race

In a relay race, one runner finishes and passes the baton to the next runner.

Real-time example: Inter-thread communication using wait() and notify() is similar to baton passing between threads.

Puzzle: What happens if one runner falls asleep while holding the baton?

Thread Creation & Priorities

Puzzle 1: Starting New Employees

A company hires new employees and assigns them tasks with different priorities (urgent, normal, low).

Real-time example: Creating threads using Thread class or Runnable interface.

Puzzle: Why does the highest priority employee sometimes still wait?