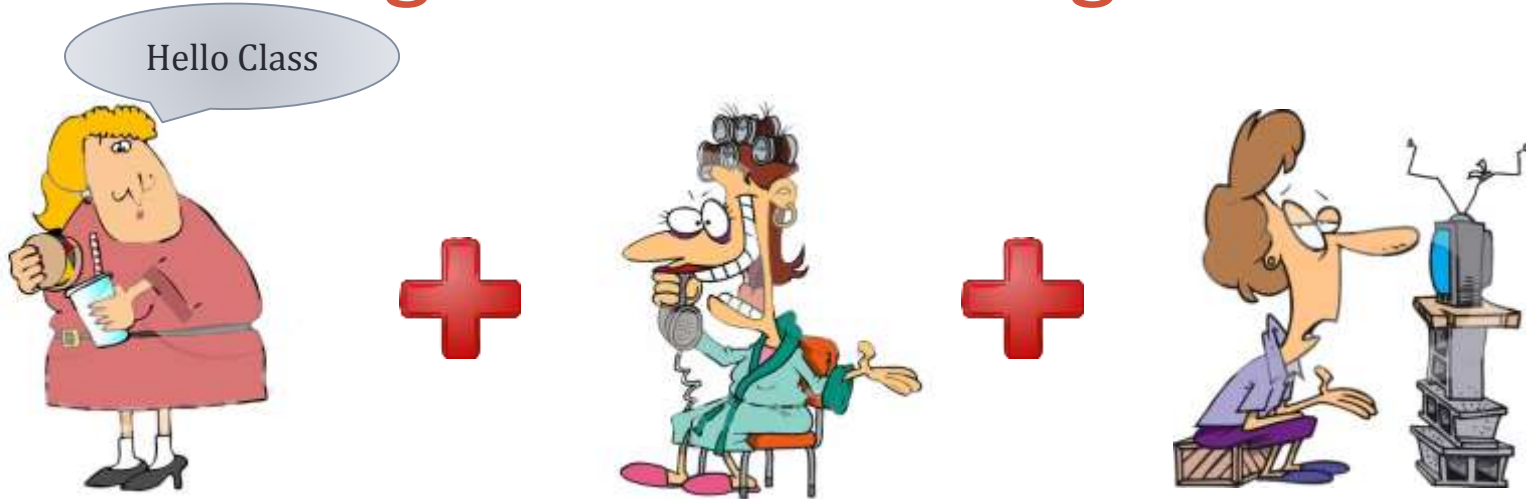# Multithreading in Java

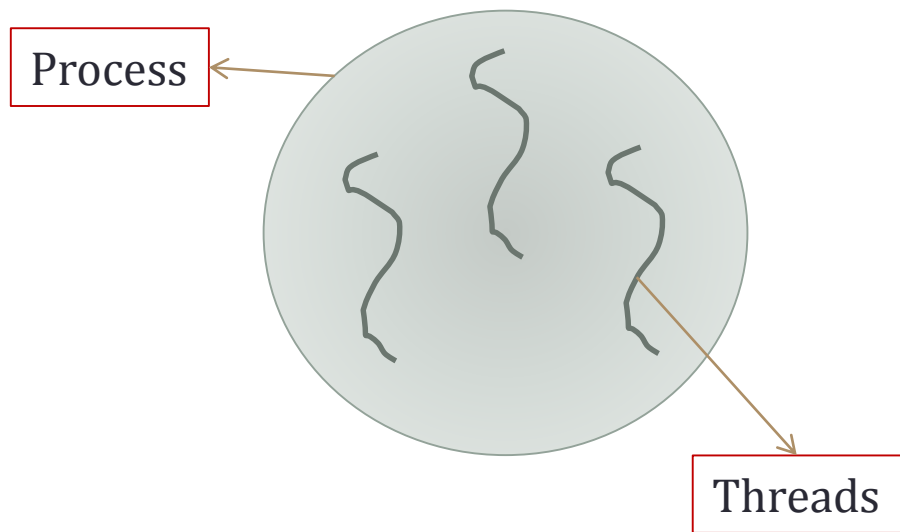# Multitasking - Multithreading

Handling multiple tasks – Multitasking
Ability to initiate multiple processes - Multithreading

Process & Threads

Process

Threads

Spell Checker in word can be considered as a thread

An application running is called a process, a process can have multiple threads.
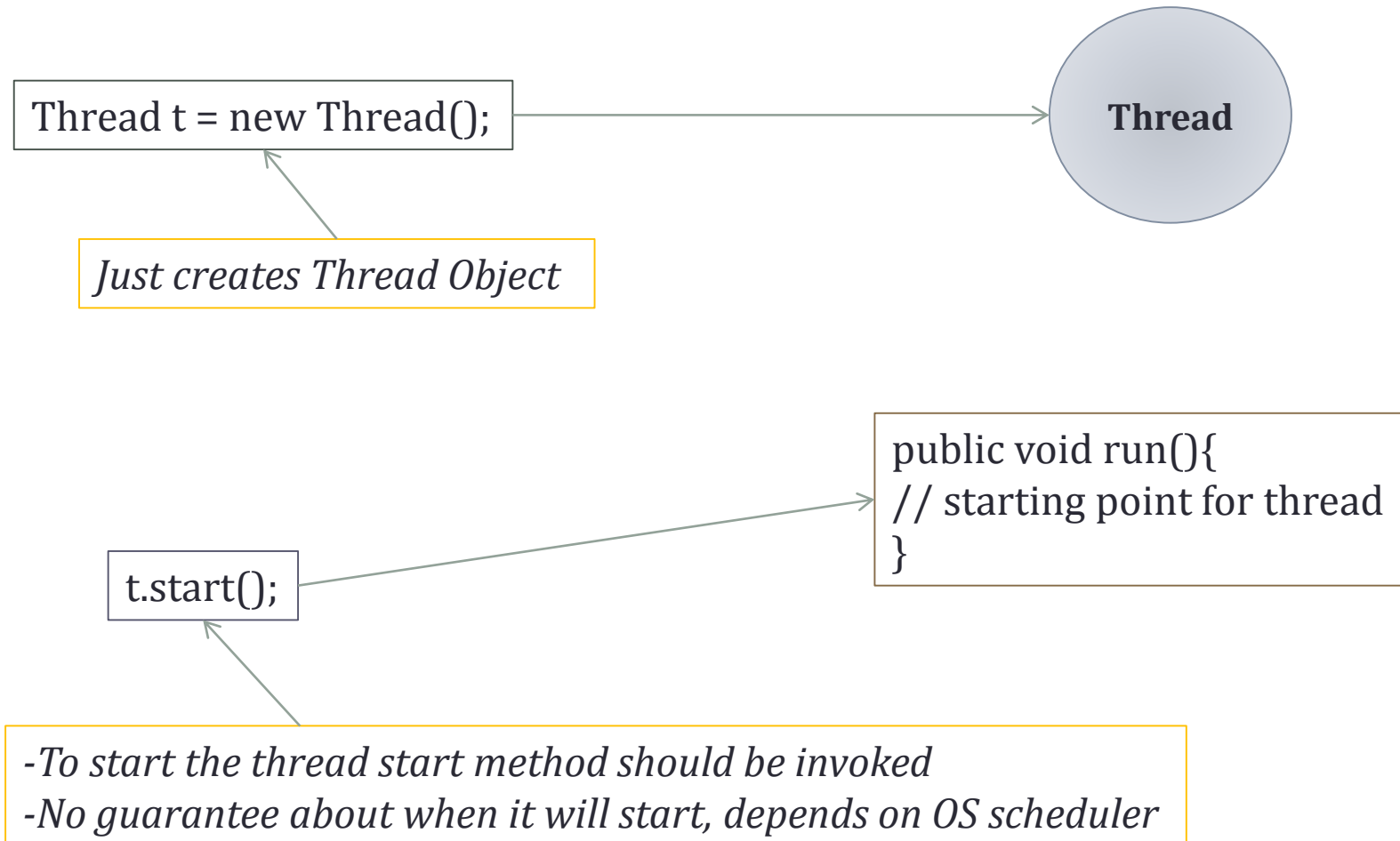
Example - Thread

NFS

ROAD RASH

Games are best example for applying Multithreading

What are Threads?

- Two or more tasks executing concurrently within a single program.

- It is an independent path of execution in a program.

- You always have thread in your application even if you don't create it.

- main method is a thread and also known as main thread.

- Threads are scheduled by OS to be processed by the Processor, so its behavior depends on the OS. It cannot be guaranteed about threads execution.

- In java it is created & controlled by **java.lang.Thread** class

Creating Threads

Thread t = new Thread();

Thread

Just creates Thread Object

public void run(){
// starting point for thread
}

t.start();

-To start the thread start method should be invoked
*-No guarantee about when it will start, depends on OS scheduler*

Starting up with Threads

- There are two ways to create thread in java;
  - By Extending the Thread class (java.lang.Thread)
    - instance of a class that inherits from thread
  - Implement the Runnable interface (java.lang.Runnable)
    - instance of thread where you pass the behavior of the thread into the thread constructor
- **Let us see examples**
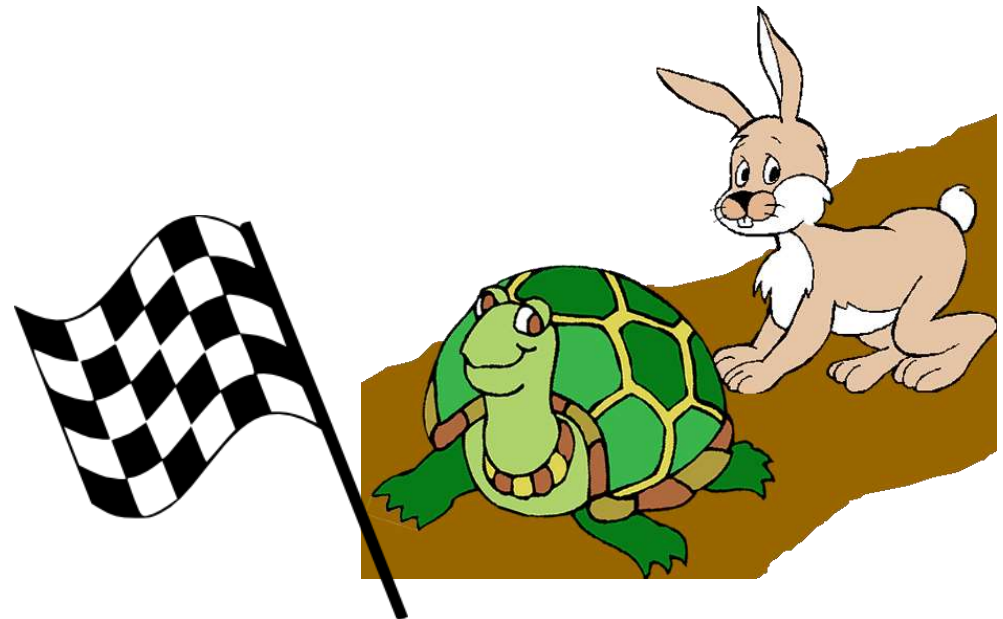
Lifecycle of a Thread
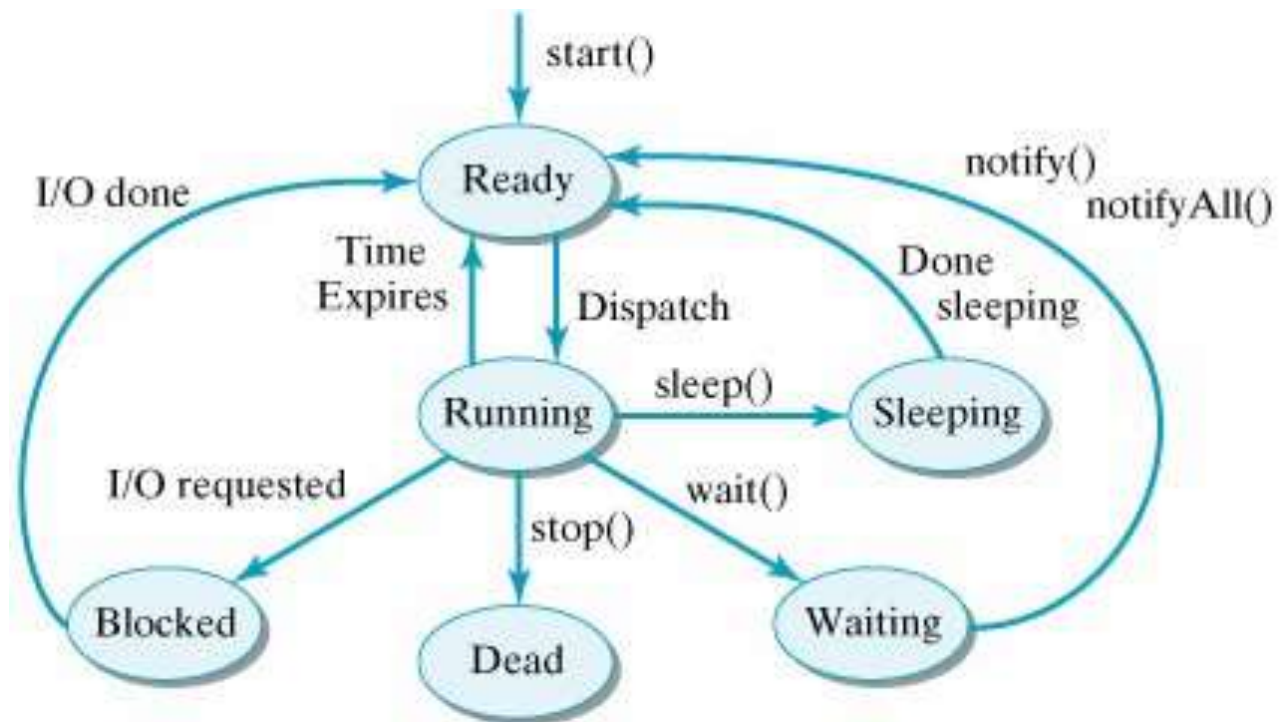
Thread - sleep()

- A method used to tell the current thread to sleep for certain time.
- Sleep method accepts time in milliseconds.
- Can throw InterruptedException.
- Cannot guarantee that a thread goes to sleep for specified time.
- Once sleep state is complete, the thread can move to Runnable or Running state.

Action Listener

Action Listener Example

- When you create a button on a Frame, and when you press it and something happens that is called ActionListener. We tell the button to do something when it is clicked. Or it can be performed on TextBox, CheckBox, Radio Buttons, etc.

ActionListener

- Action Listeners are the event handlers to be implemented, that you decide what to should be done or performed on certain user operations. The event occurs whenever an action is performed by user.

- [Example 1](#)
- [Example 2](#)

Done!