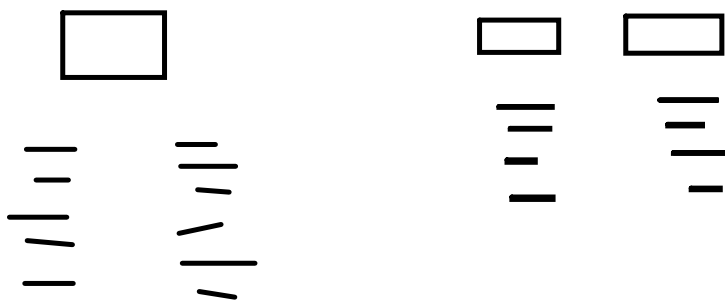Akka :

Play

Concurrent Application :

CPU is getting wider : multi-core

Req : Application to sync with CPU arch.

Shared Mutable State

Concurrency V/s parallelism

Concurreny : Multitasking on single core

Parrellelism : Multiple Threads running on multicore processor

Asynchronous V/s synchronous

sync : caller waits

async : caller may proceed and called method may inform back using callback or future or message

Blocking V/s Non-Blocking
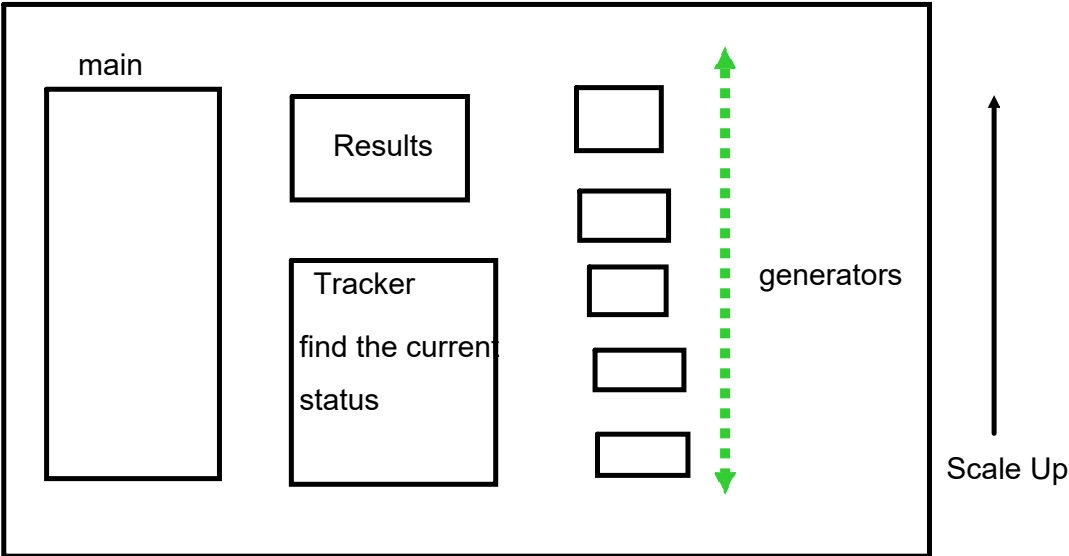
one thread delaying other

Race Condition

more than one thread try to change state of shared mutable data

USe - Case : Create a sorted set of 20 probable prime big integers
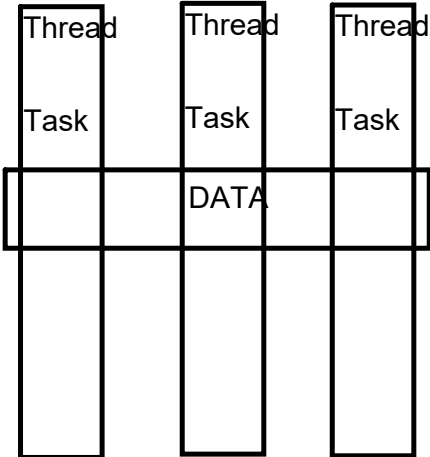
BigInteger.nextProbablePrime()

Single Threaded response : 24852 ms.

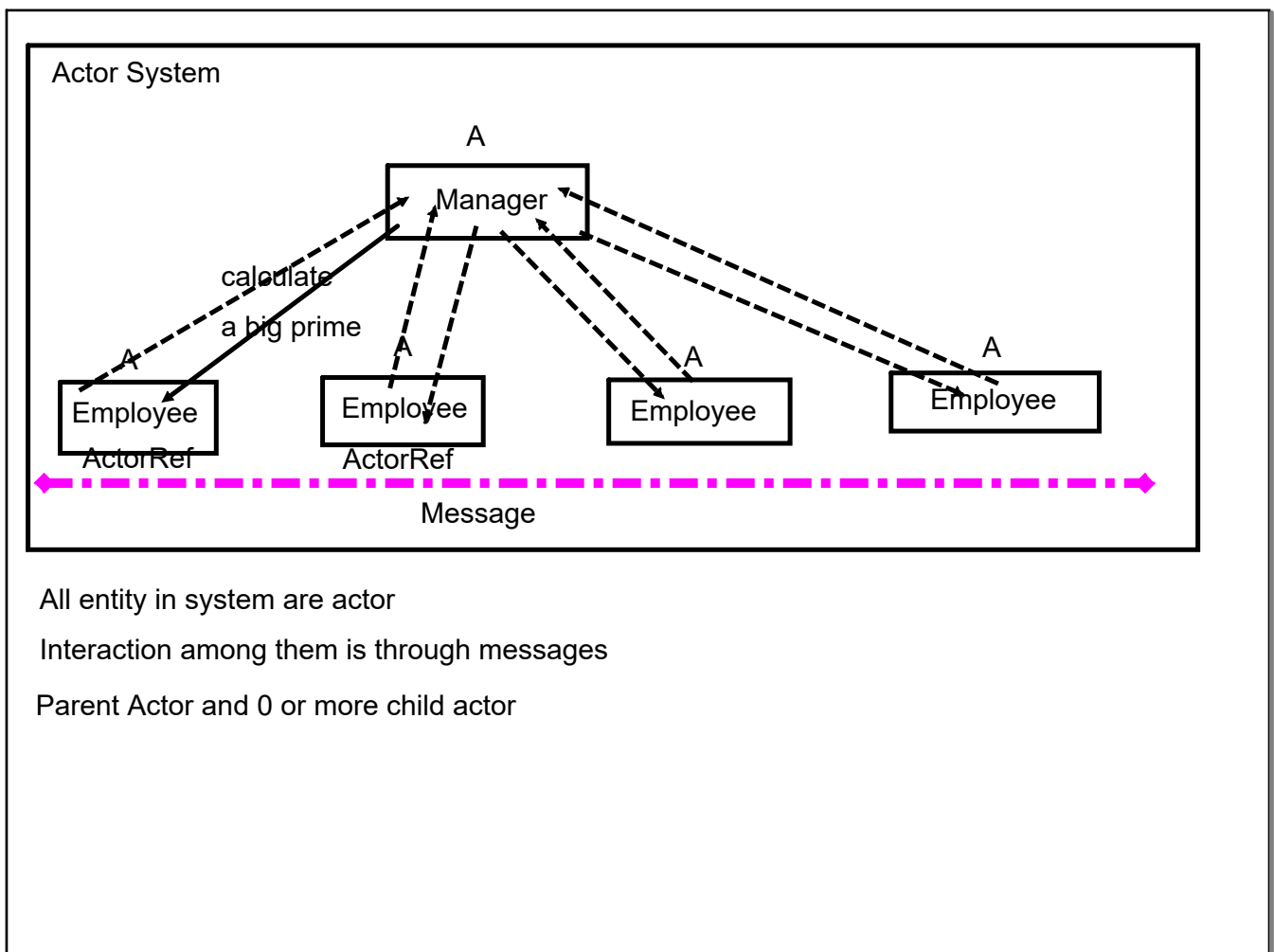Multi Threaded env : 10957 ms.

main

Results

Tracker

find the current

status

generators

Scale Up

Three primary concerns

    1. Data Thread Safe

    2. Thread blocking

    3. Exception handling

Thread

Thread

Thread

Task

Task

Task

DATA

Actor System

A

Manager

calculate

a big prime

A

Employee
ActorRef

A

Employee
ActorRef

A

Employee

A

Employee

Message

All entity in system are actor

Interaction among them is through messages

Parent Actor and 0 or more child actor

ACTOR

Info
1. NAME
2. PATH

Behavior

Message Queue

Message
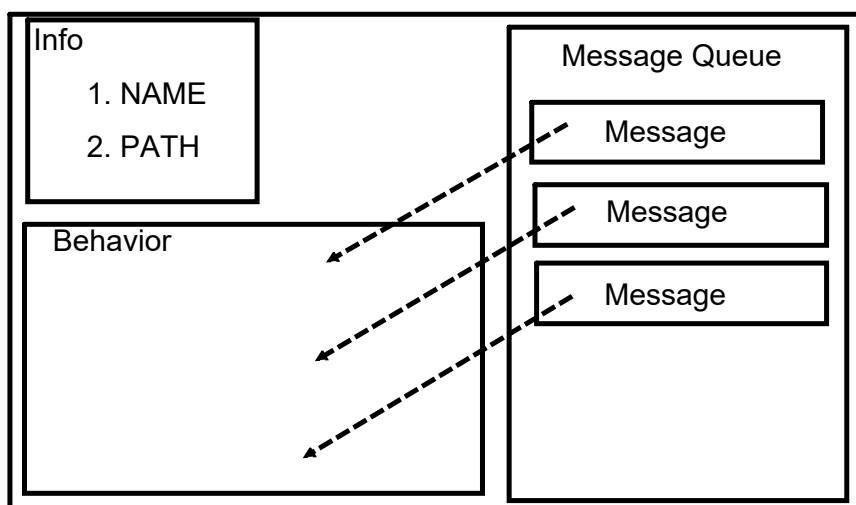
Message

Message

=>Each Actor has its own thread

=> Actors won't share data

=> Messages must be immutable

=> Messages are processed one at a time

SBT : scala build tool

Maven

Gradle

Main

Parent Actor

Tracker

Child Actor

Child Actor

Child Actor

done calculation

show the list

add it to collection