Request/Response Communications

Request/Response Operation

- Actor communication encouraged to be asynchronous
  - "fire and forget"
  - no implicit reply

- Request/response communications possible
  - use `ask` method rather than `tell` method
  - `?` rather than `!`

- Leverages Futures for handling replies

Request/Response Example

- Actor generates and sends a random `Int` value between 0 and 100

```scala
import akka.actor._

case object GetRandomInt                        Message

class RandomNumActor extends Actor with ActorLogging {

  log.info("Creating the Random Number Generator Actor")
  val rGen = new scala.util.Random

  override def receive = {
    case GetRandomInt => sender ! Math.abs(rGen.nextInt) % 100
  }
}
```

Request/Response Example

- Send request and handle response as `Future[Int]`

```scala
import akka.actor._
import akka.pattern.ask
import scala.concurrent.duration._
import scala.concurrent.ExecutionContext.Implicits.global

object RNActorApp extends App {

  val rnSystem = ActorSystem("RandomNumbers")
  val rand = rnSystem.actorOf(Props[RandomNumActor], "RandomNumGen")

  implicit val timeout = Timeout(1 seconds)
  val rNumFuture = (rand ? GetRandomInt).mapTo[Int]

  rNumFuture onSuccess {
      case i => println(s"=> $i")
  }
  rnSystem.shutdown
}
```

Request/Response Example

- Demonstrating async nature of calls

```
// Setup as before …
  1 to 5 foreach { n =>
        (rand ? GetRandomInt).mapTo[Int].onSuccess {
            case i => println(s"$n => $i")
          }
  }
…
```

[INFO] [06/25/2013 19:18:49.923] … [akka://RandomNumbers/user/RandomNumGen]
                                                    Creating the Random Number Generator Actor

2 => 0
5 => 78
1 => 38
3 => 26
4 => 58

Request/Response Example

- Blocking on each request until response arrives

```scala
// Setup as before …
  1 to 5 foreach { n =>
      val rn: Int = Await.result(
                         (rand ? GetRandomInt).mapTo[Int], 1 second)
    println(s"$n => $rn")
  }
…
```

```
[INFO] [06/25/2013 19:22:45.109] … [akka://RandomNumbers/user/RandomNumGen]
                                    Creating the Random Number Generator Actor

1 => 11
2 => 5
3 => 51
4 => 86
5 => 22
```