ANALYSIS OF GLOBAL TEMPERATURE
PART 4

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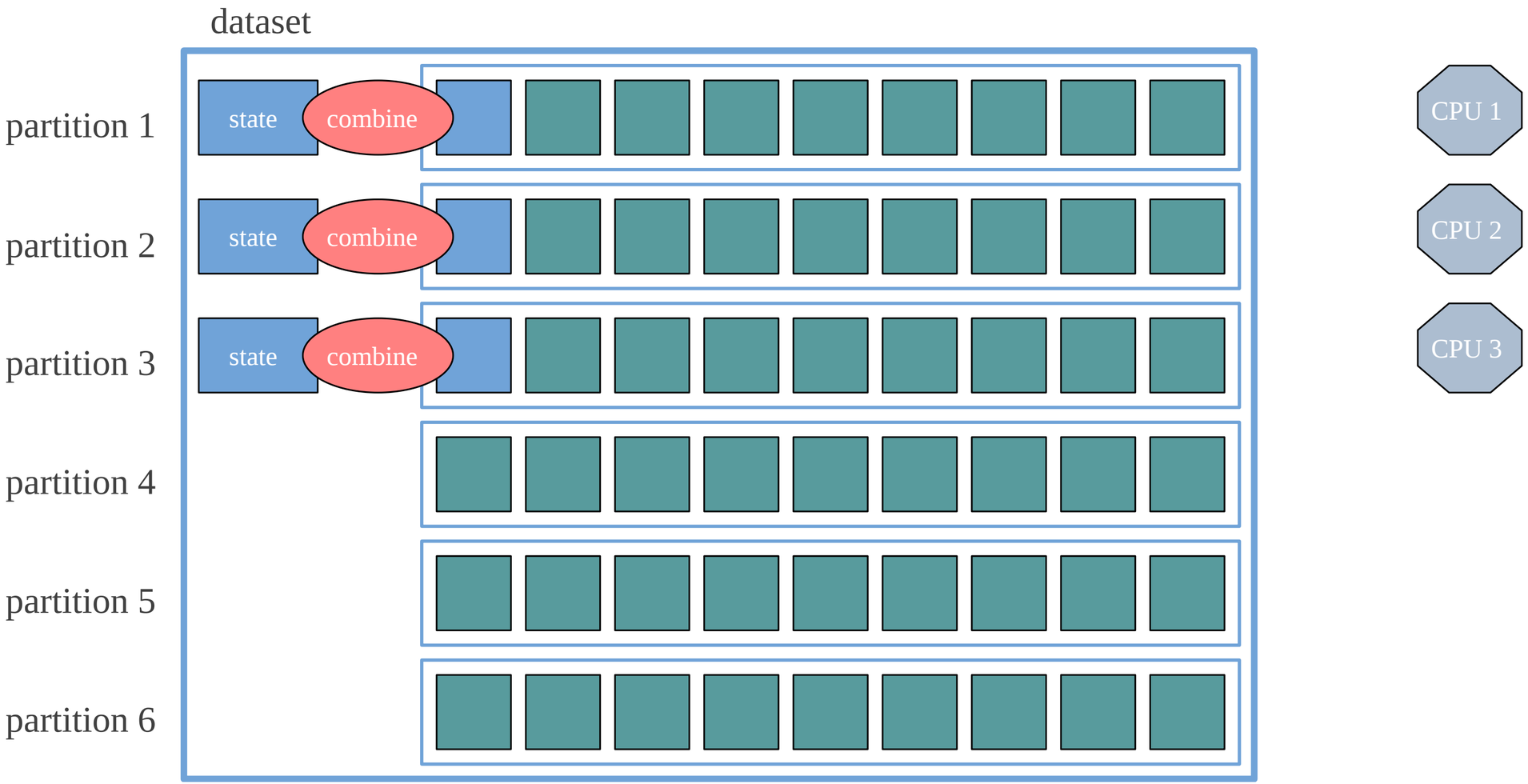

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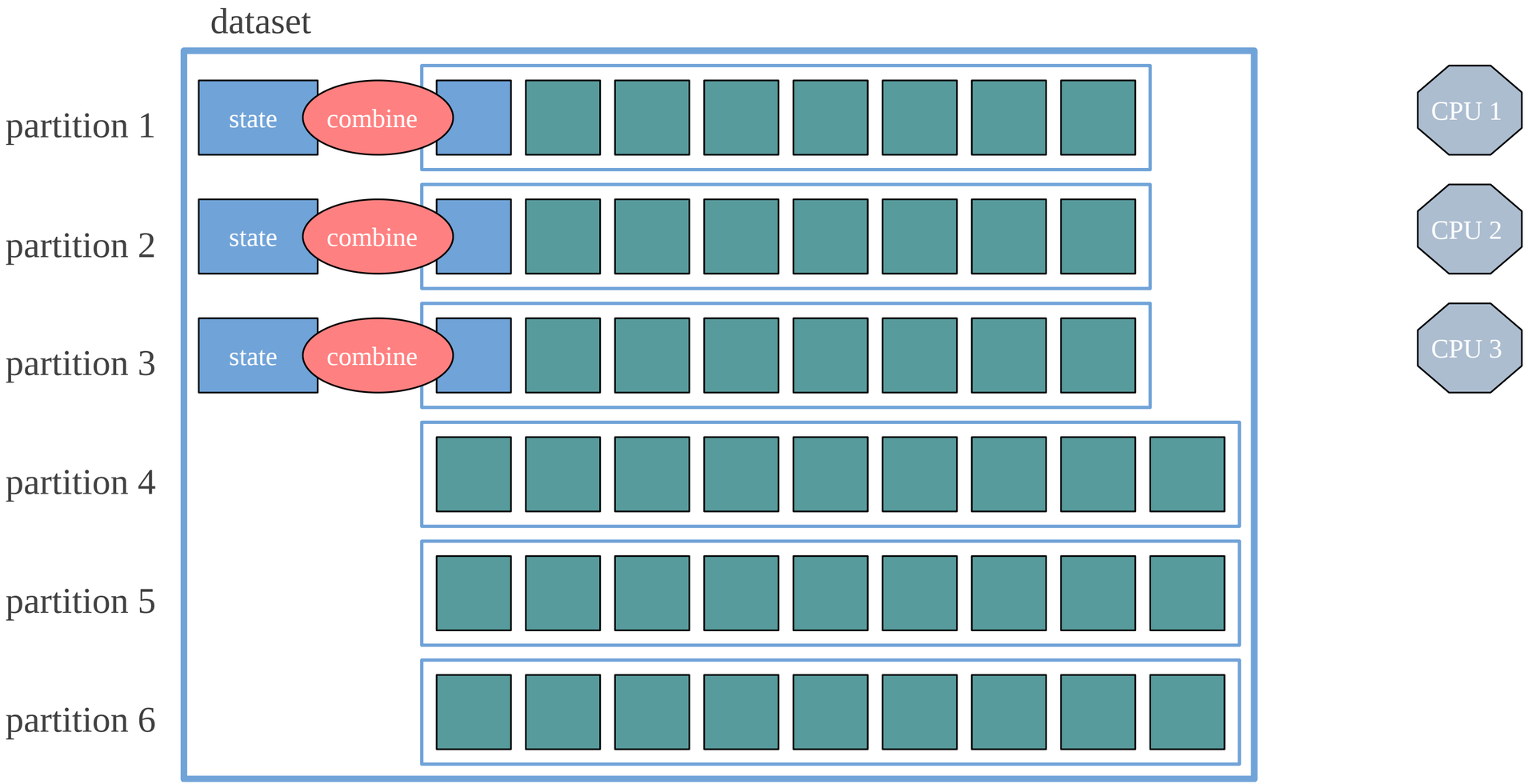

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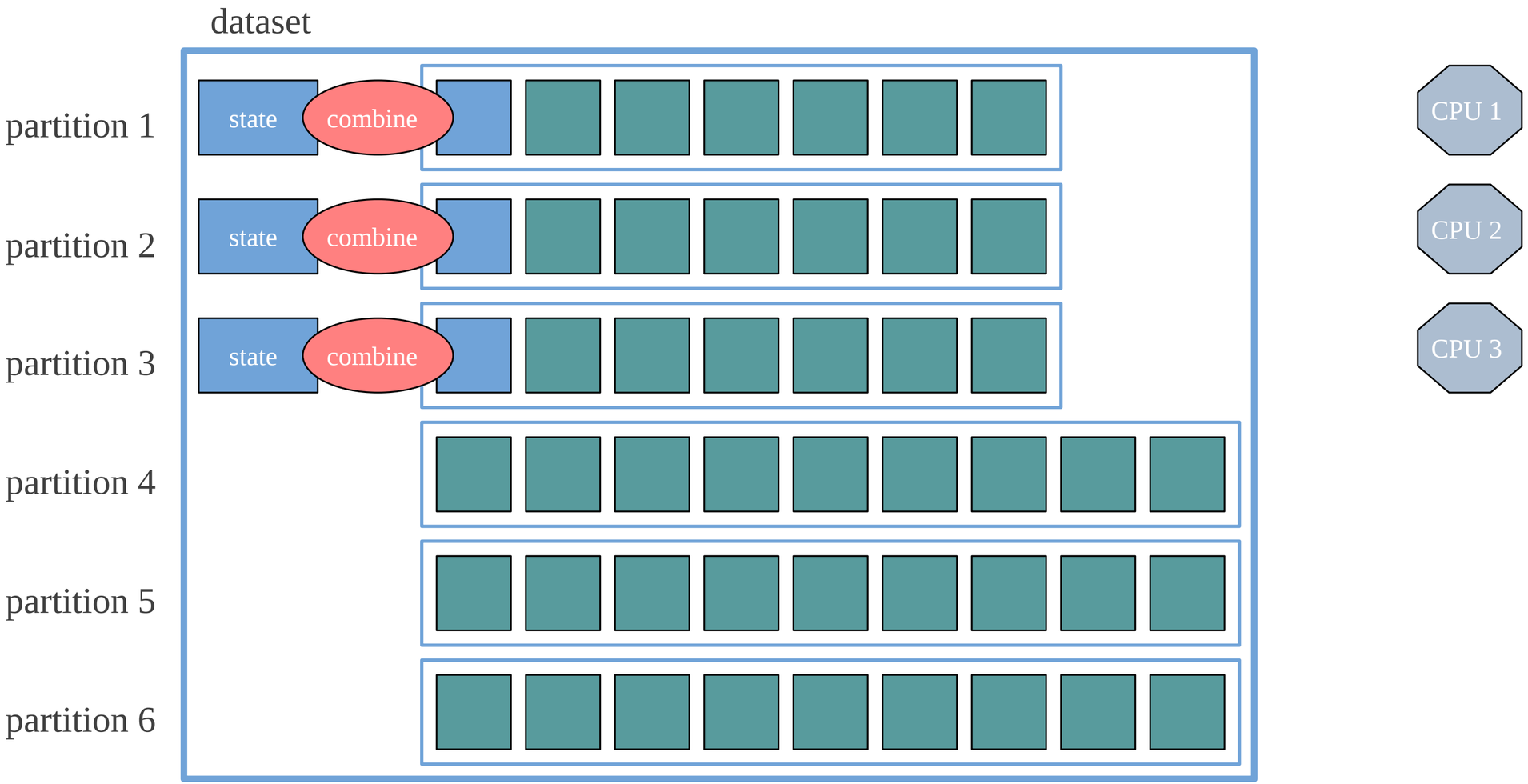

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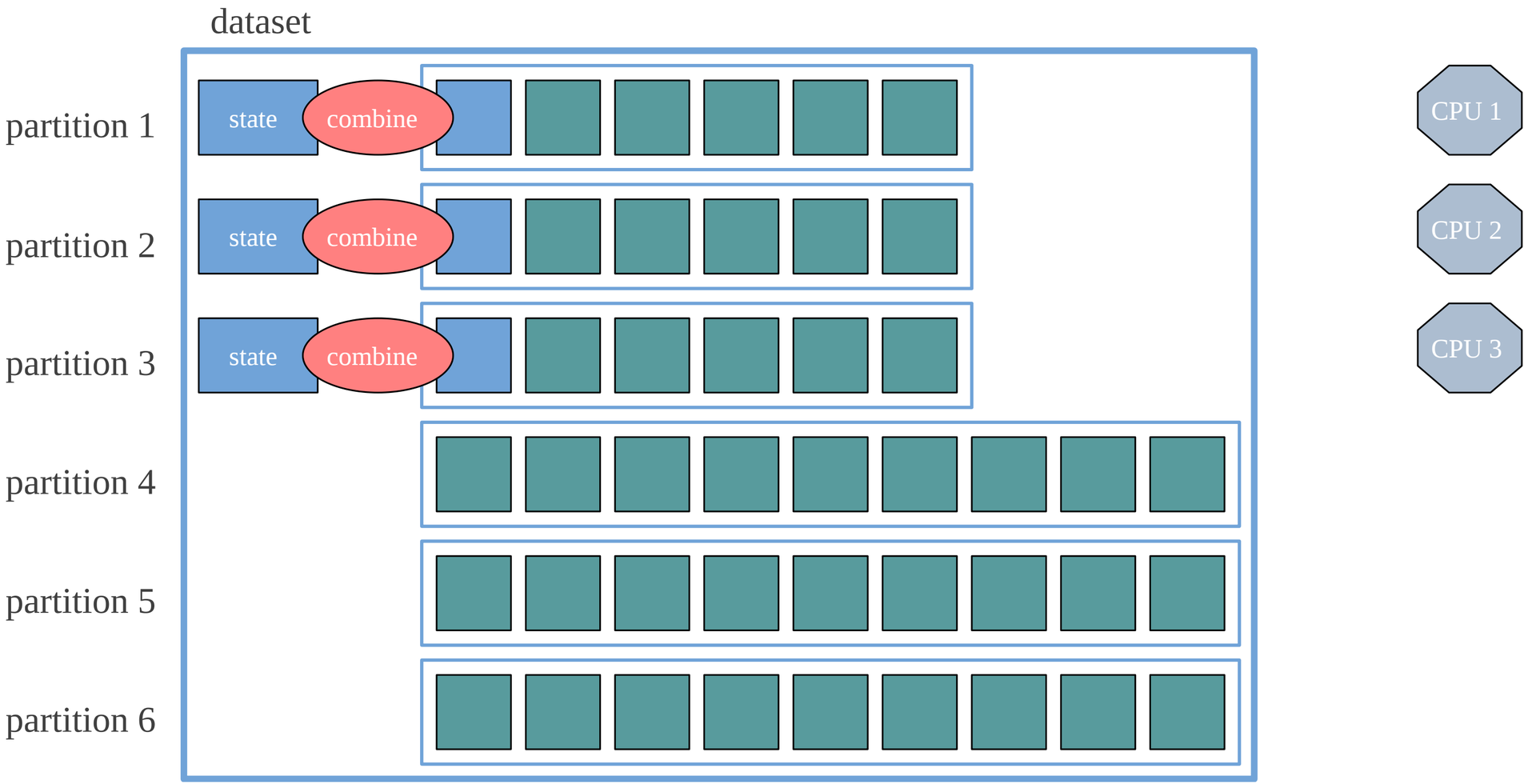

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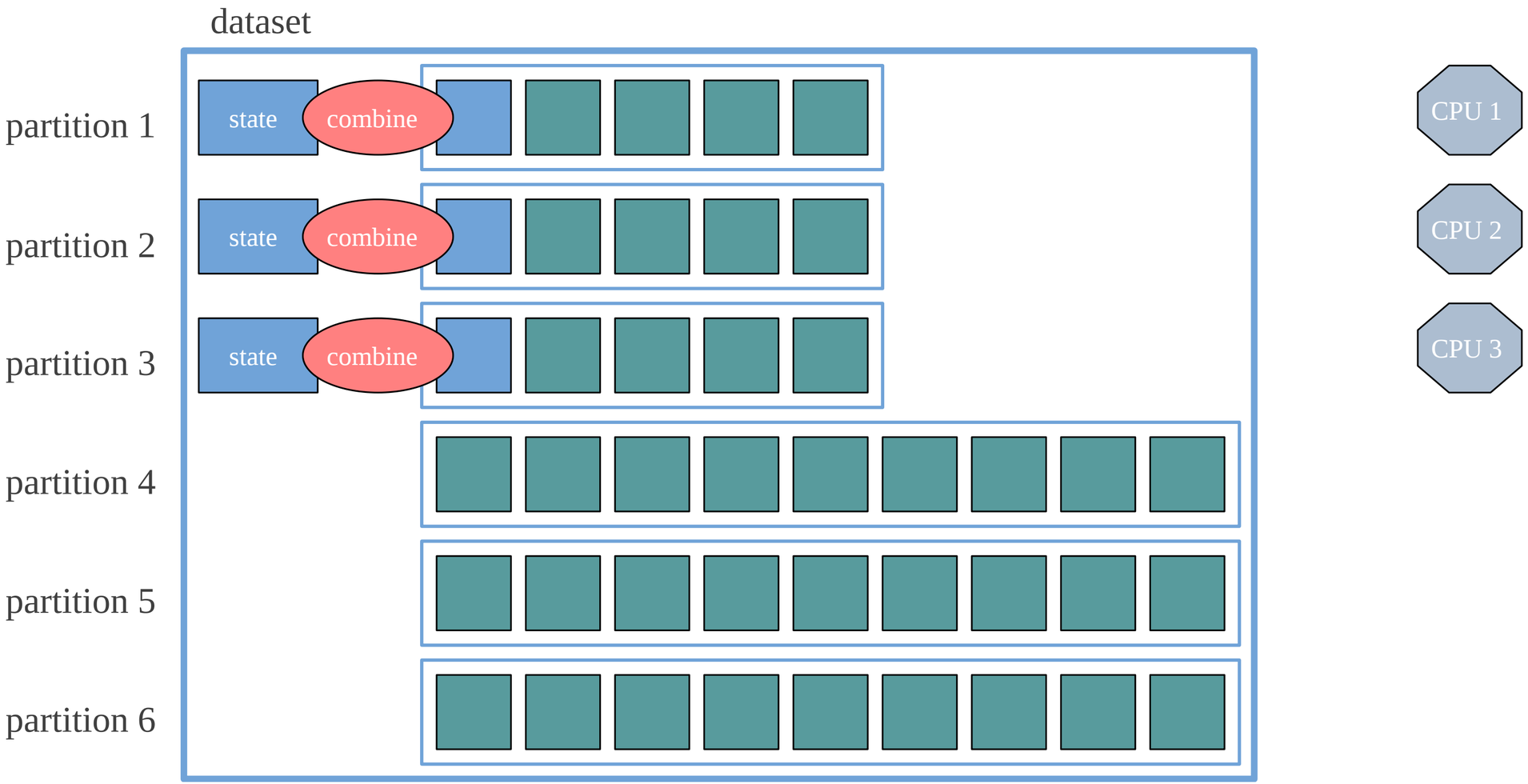

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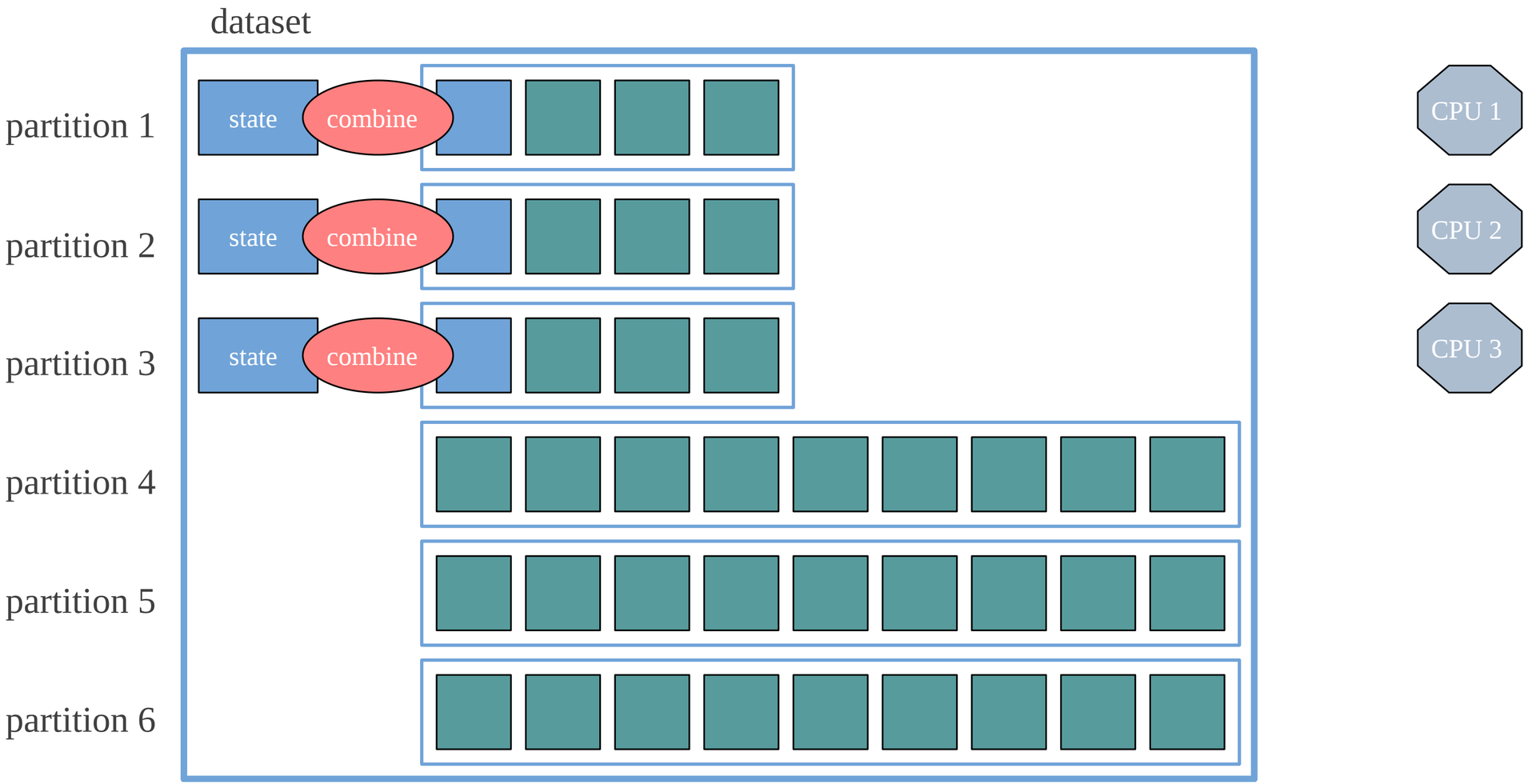

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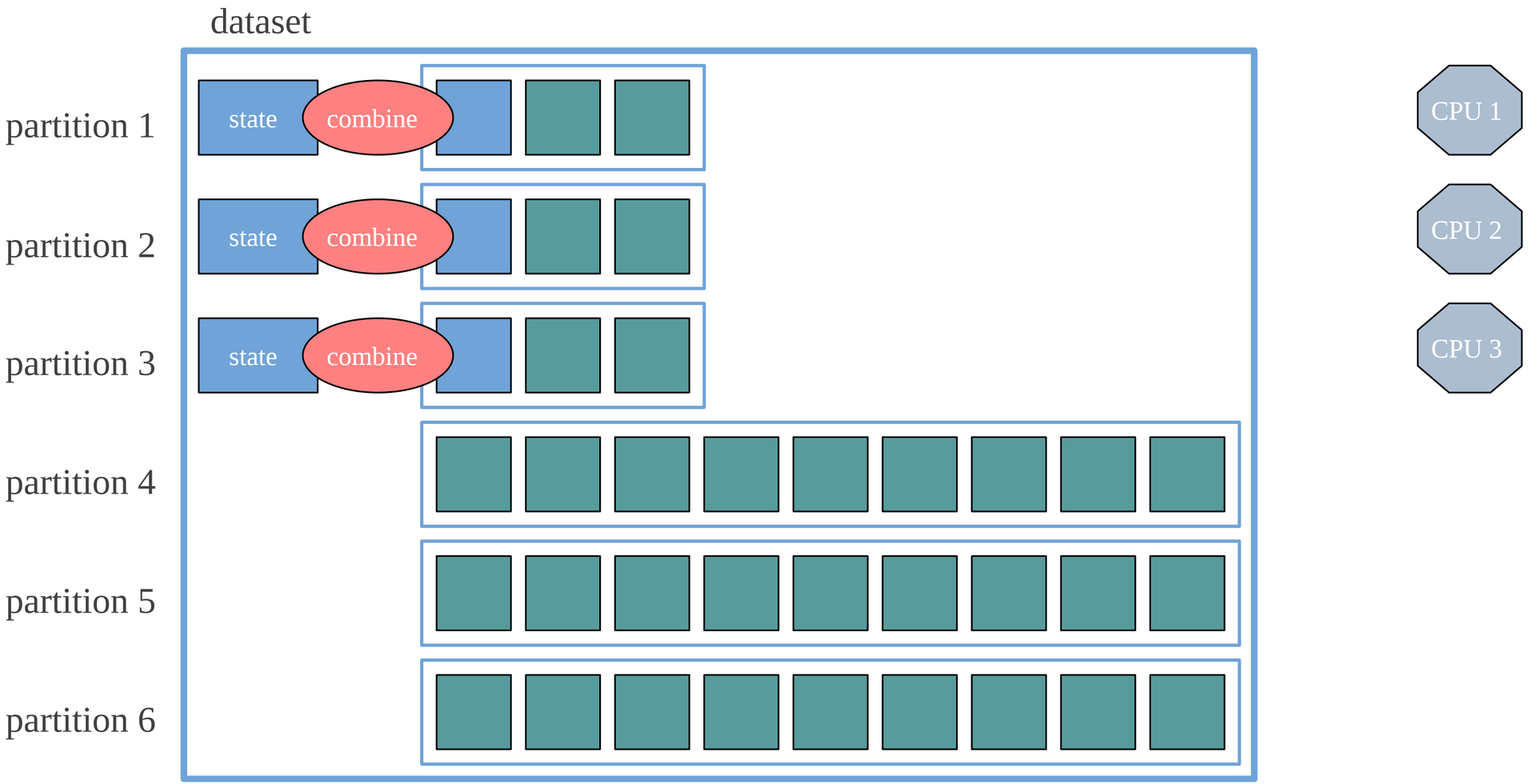

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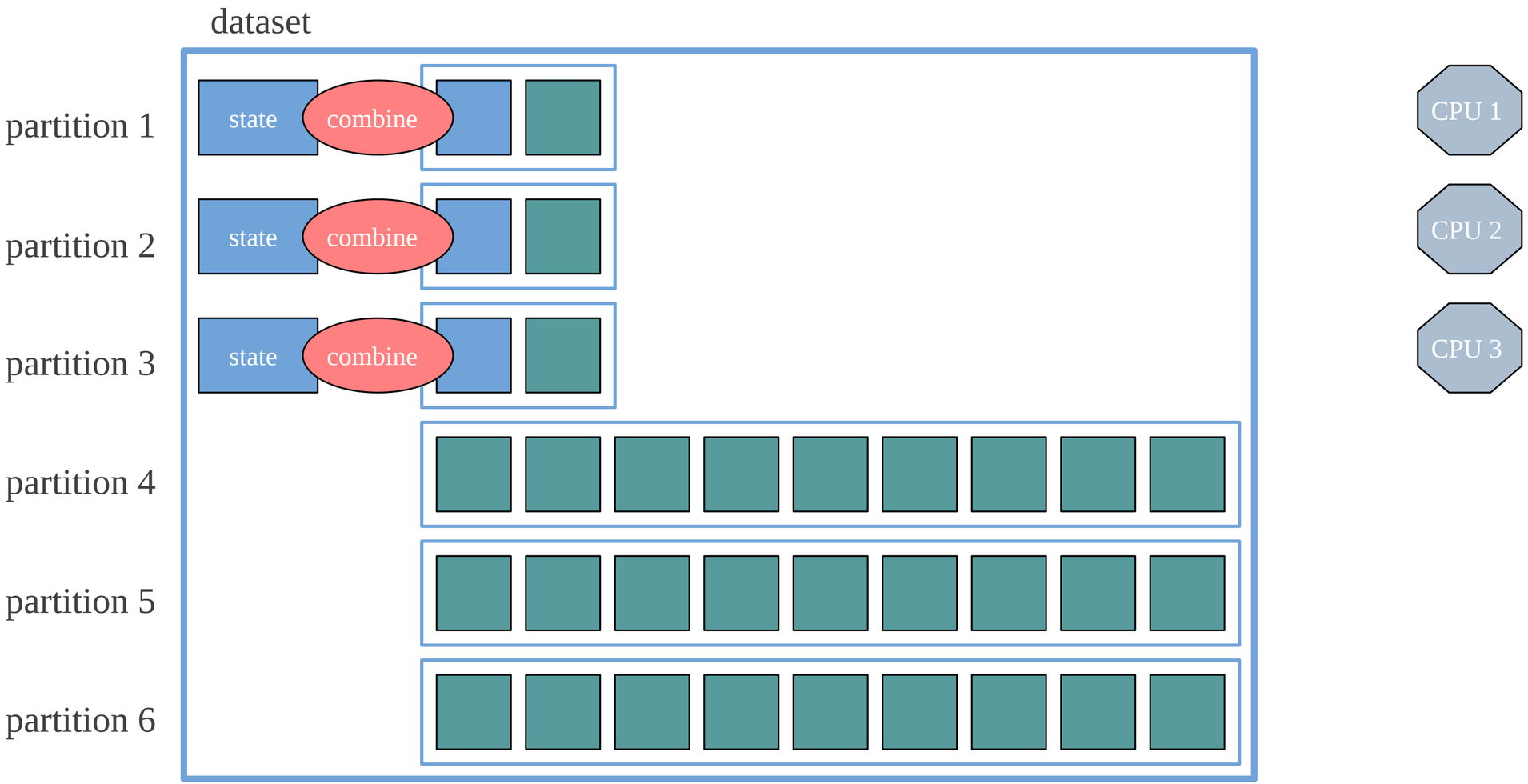

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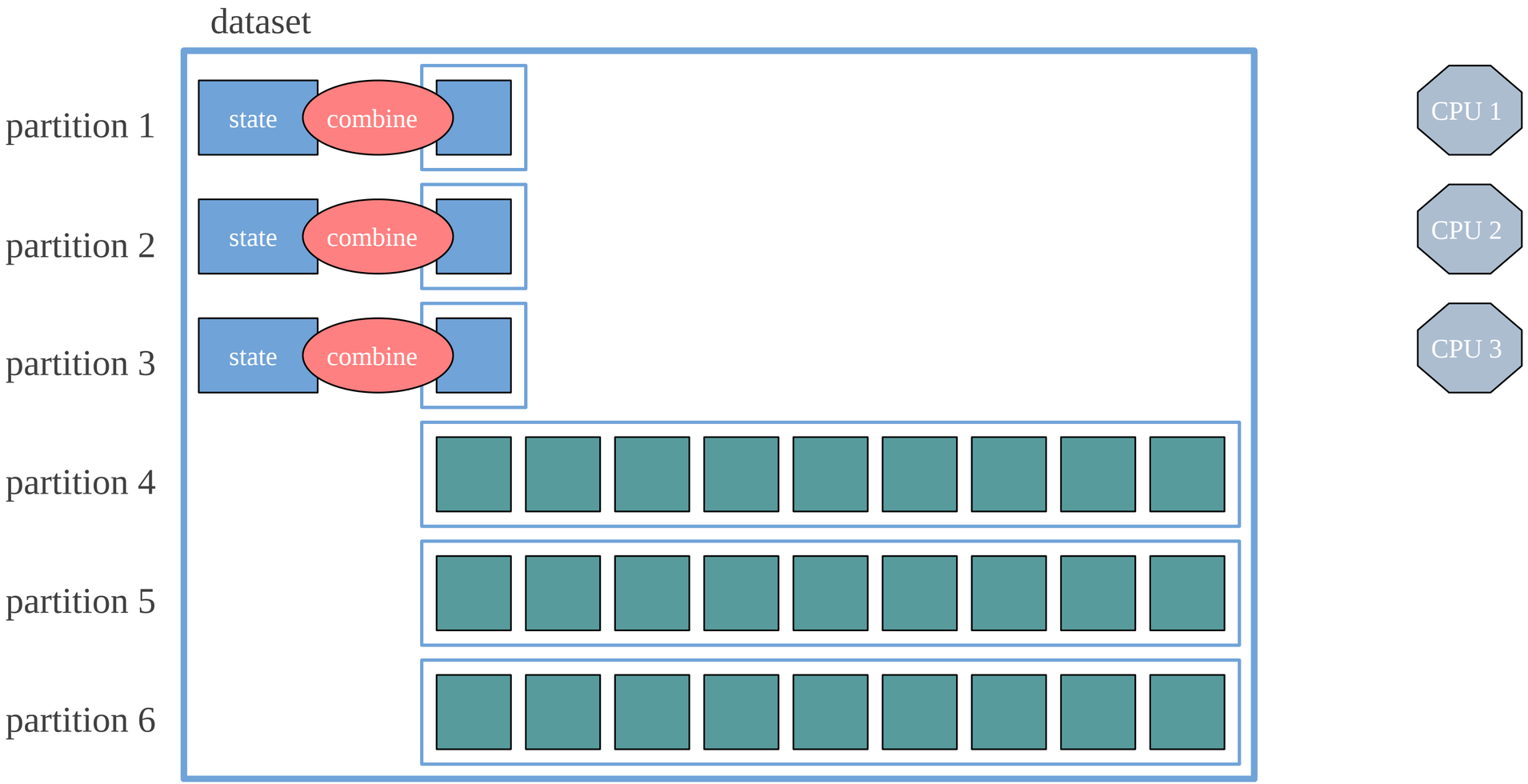

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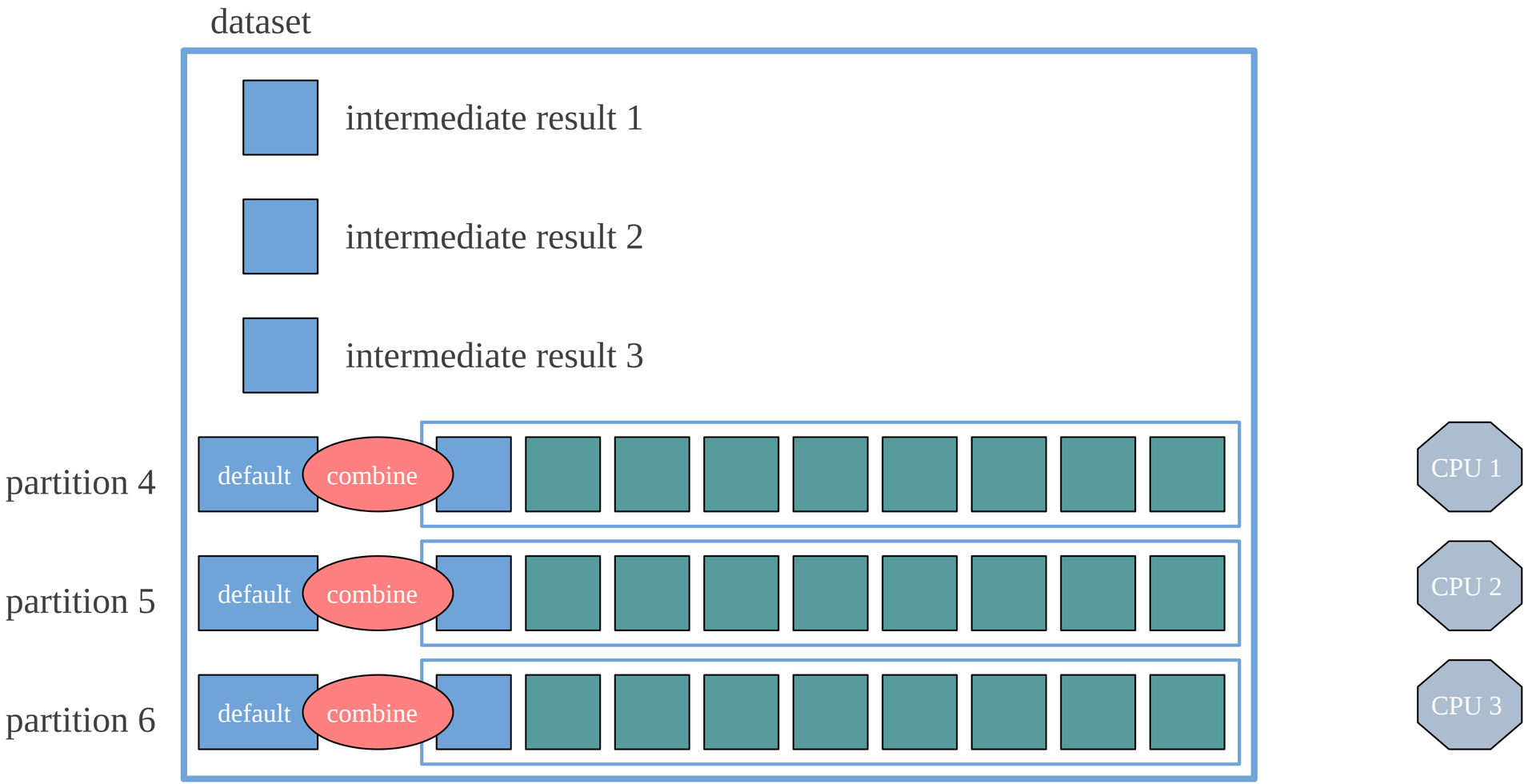

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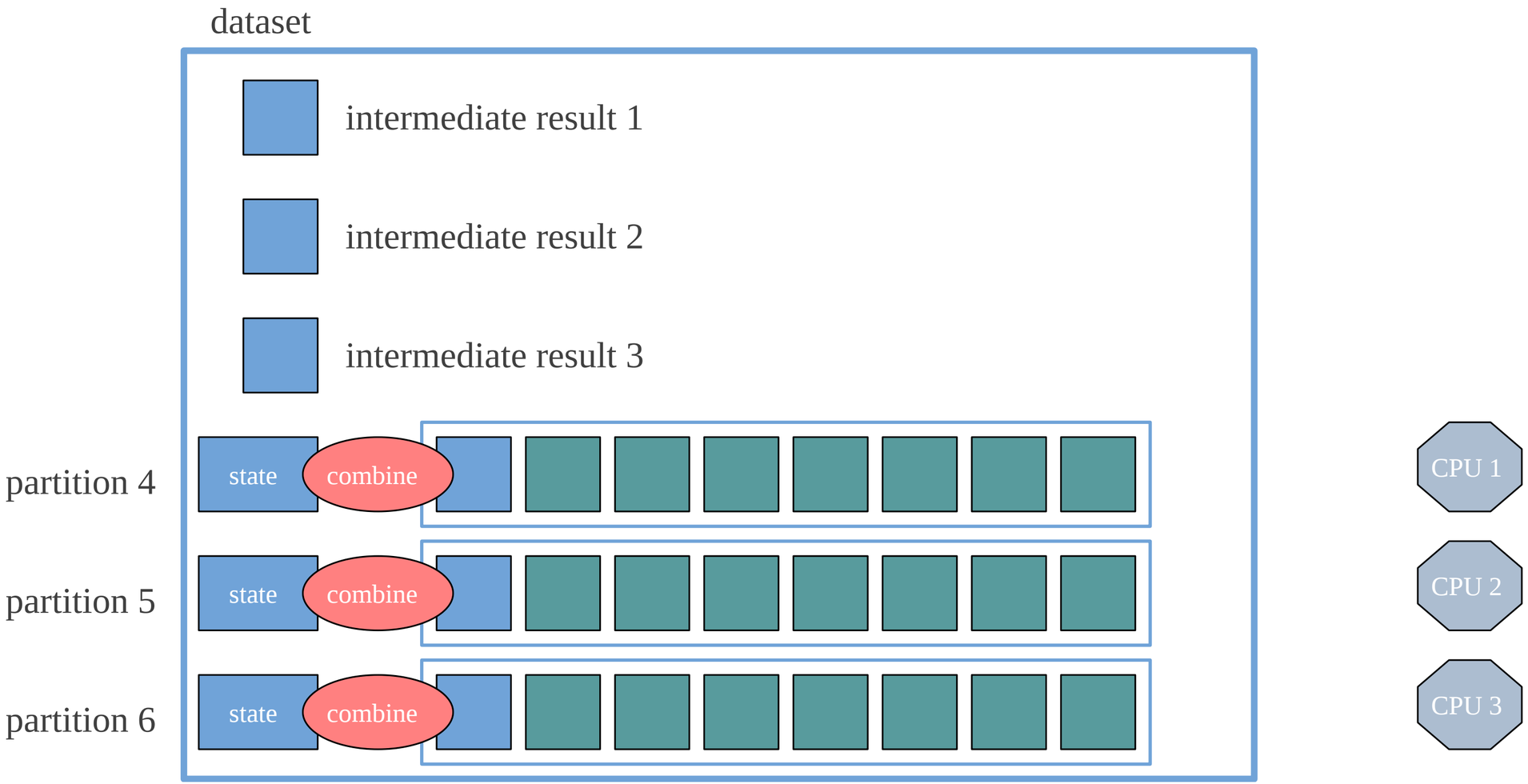

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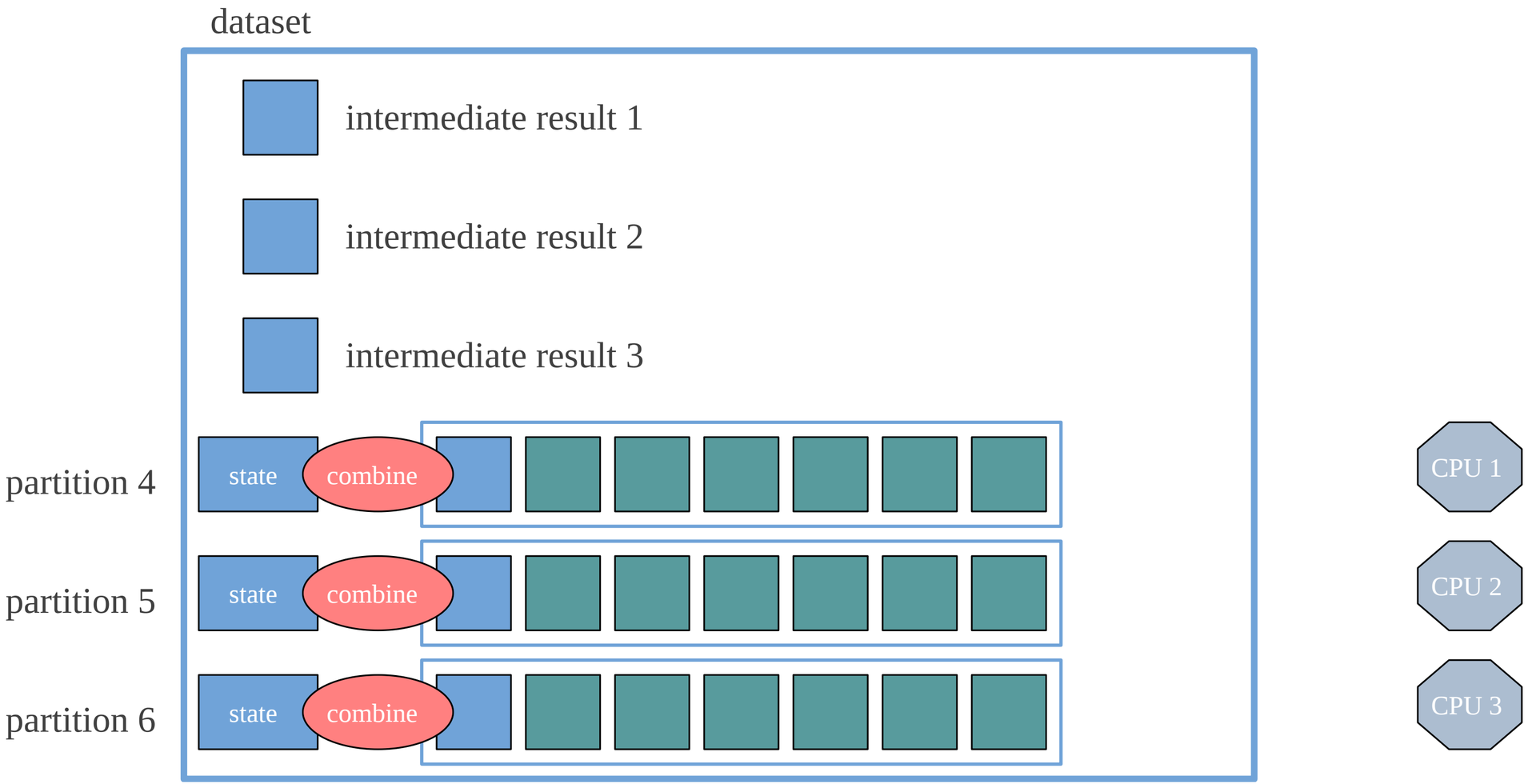

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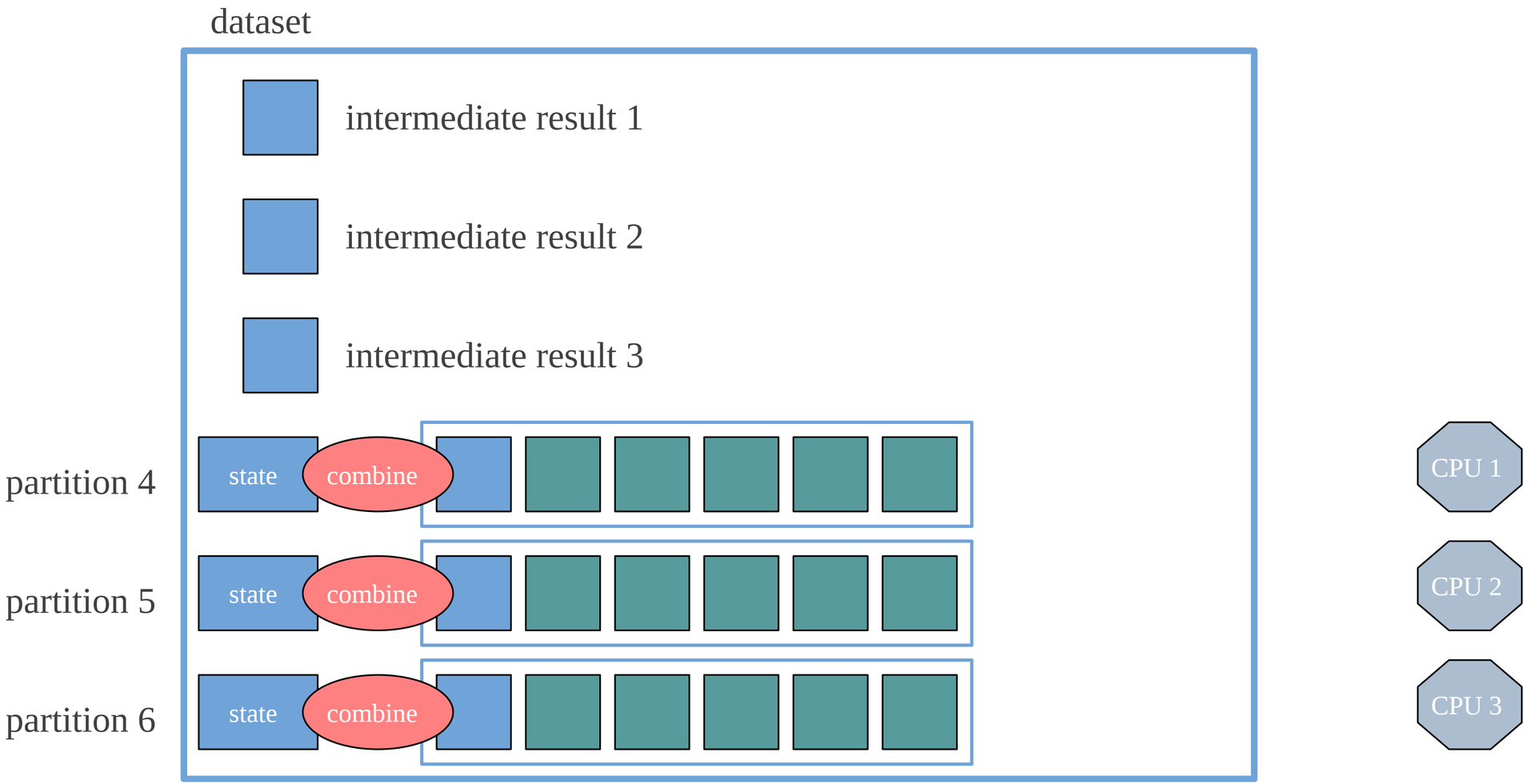

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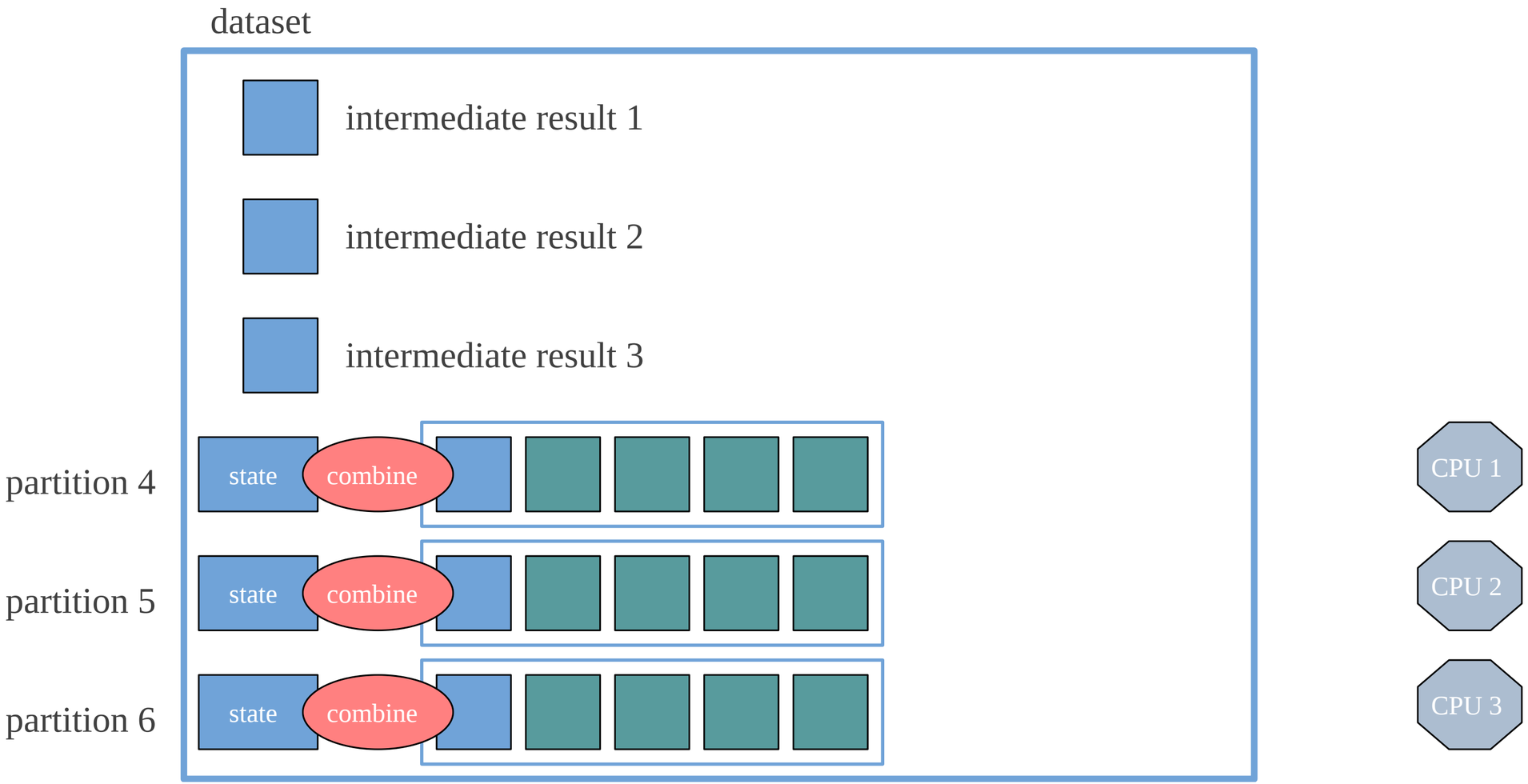

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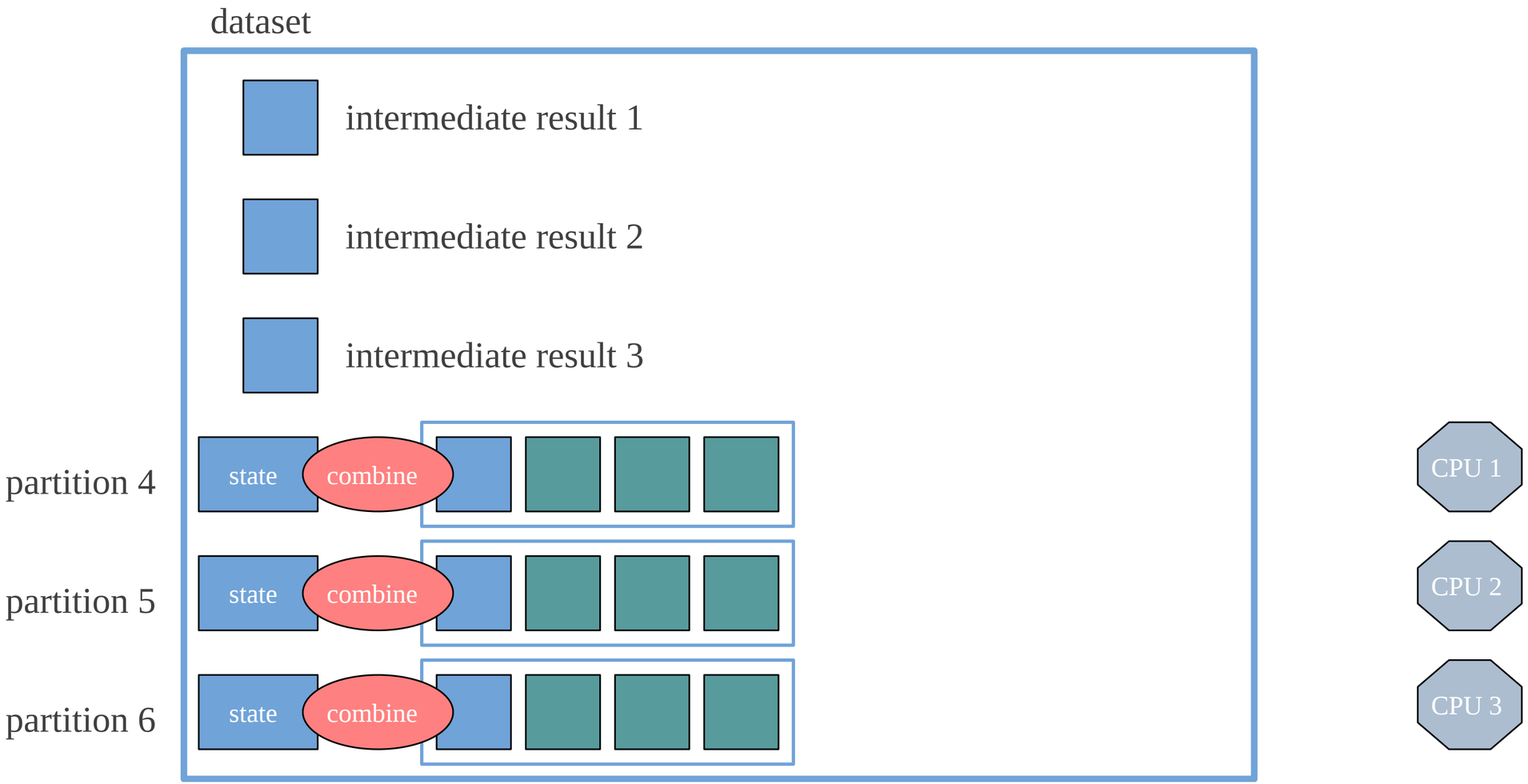

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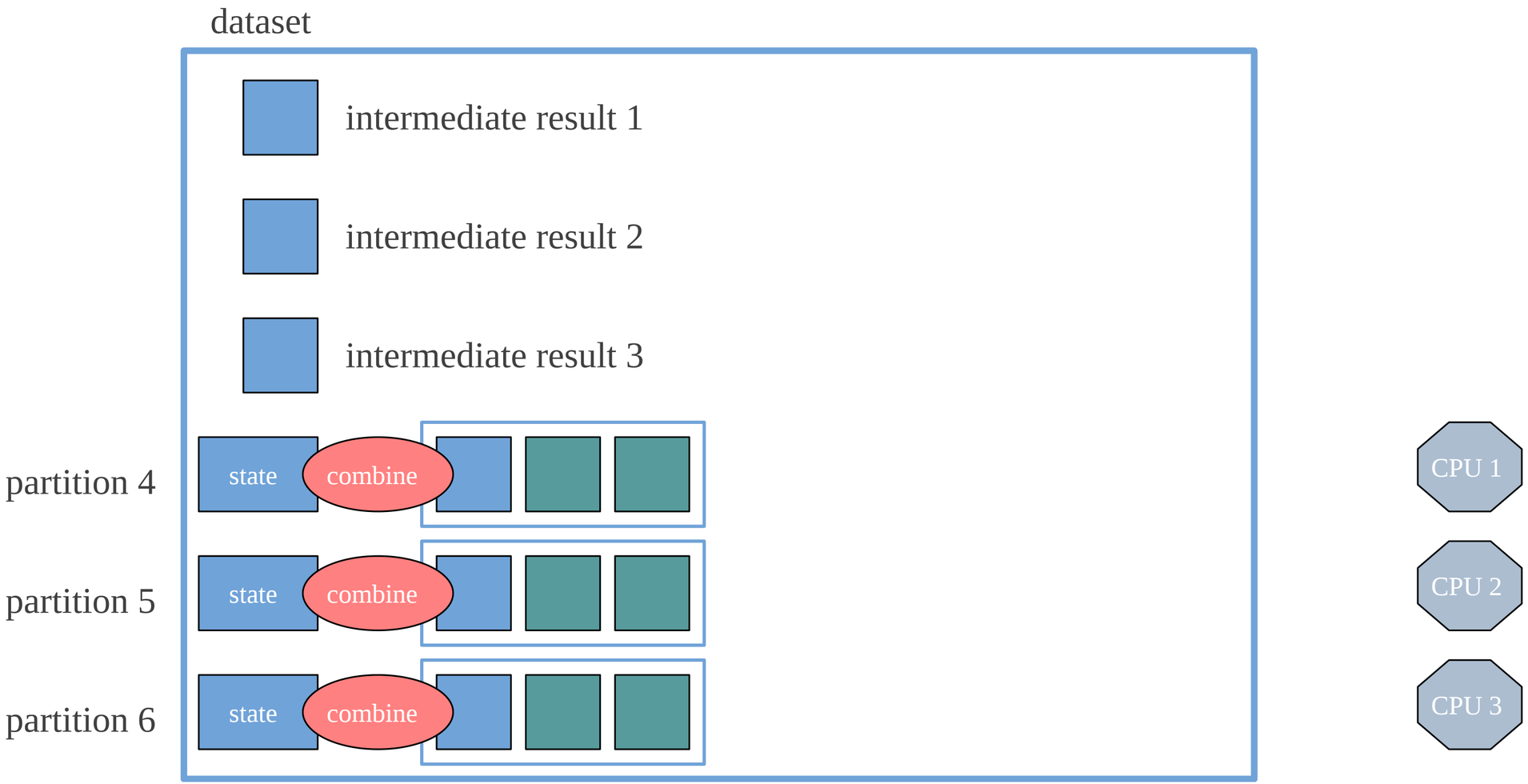

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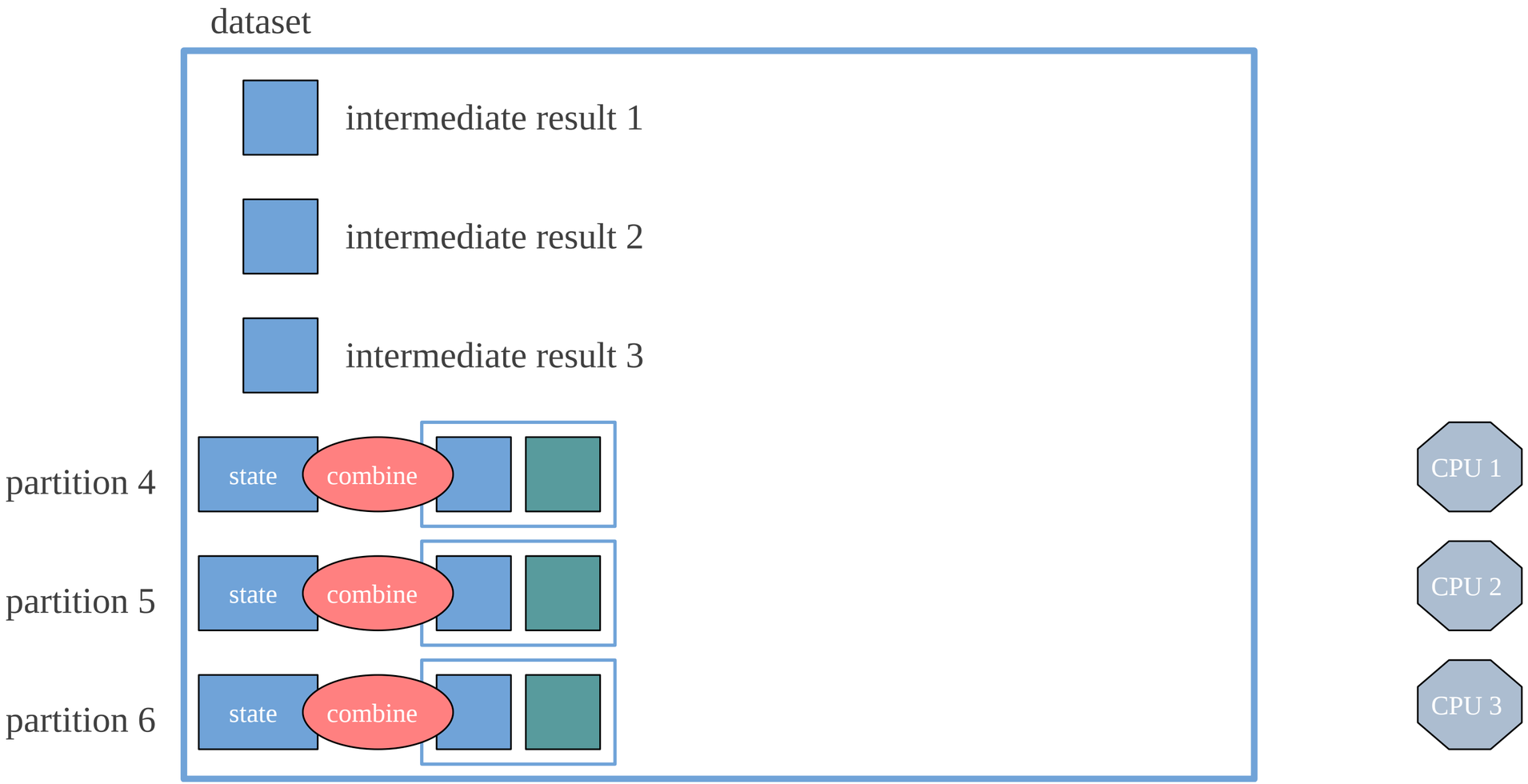

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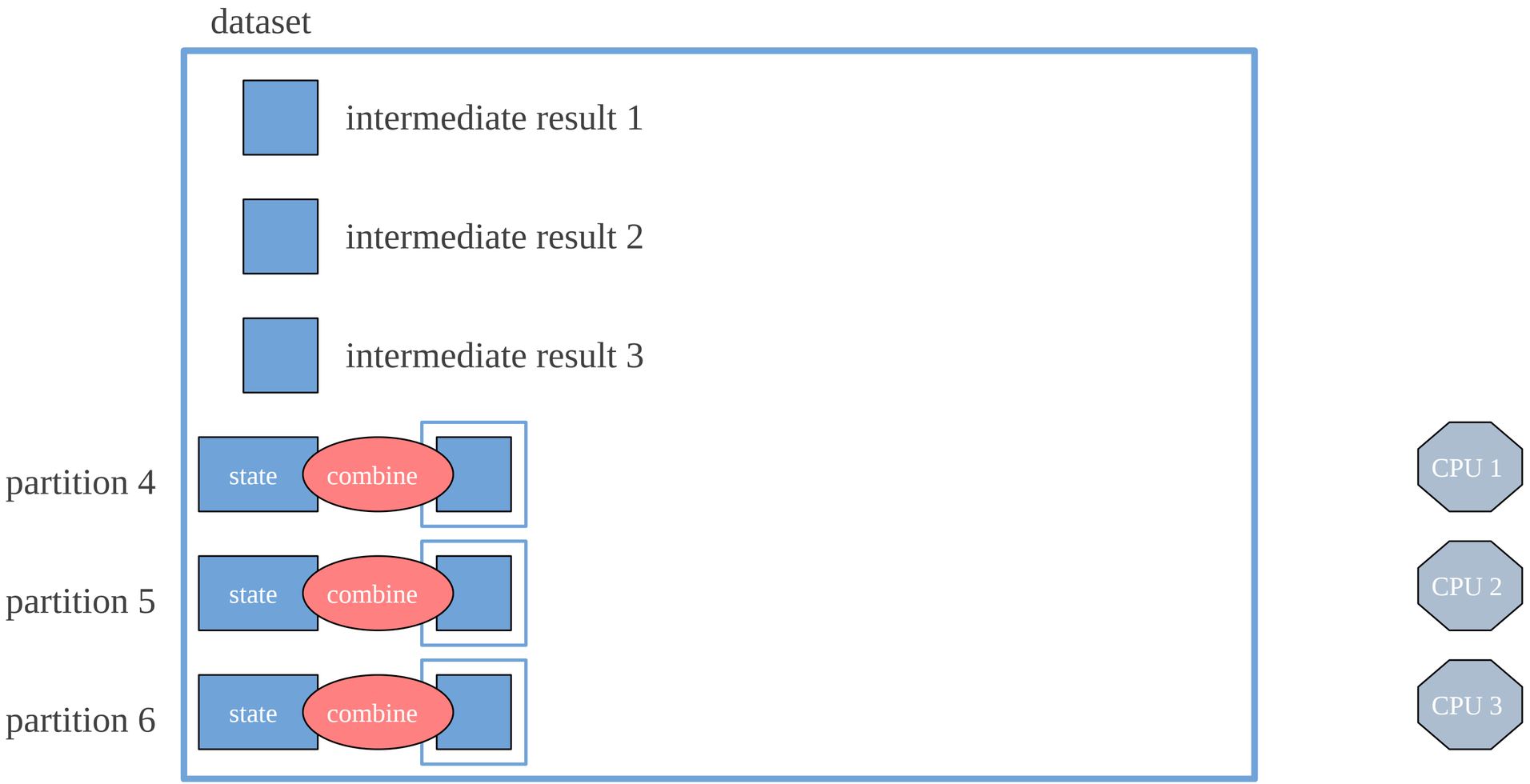

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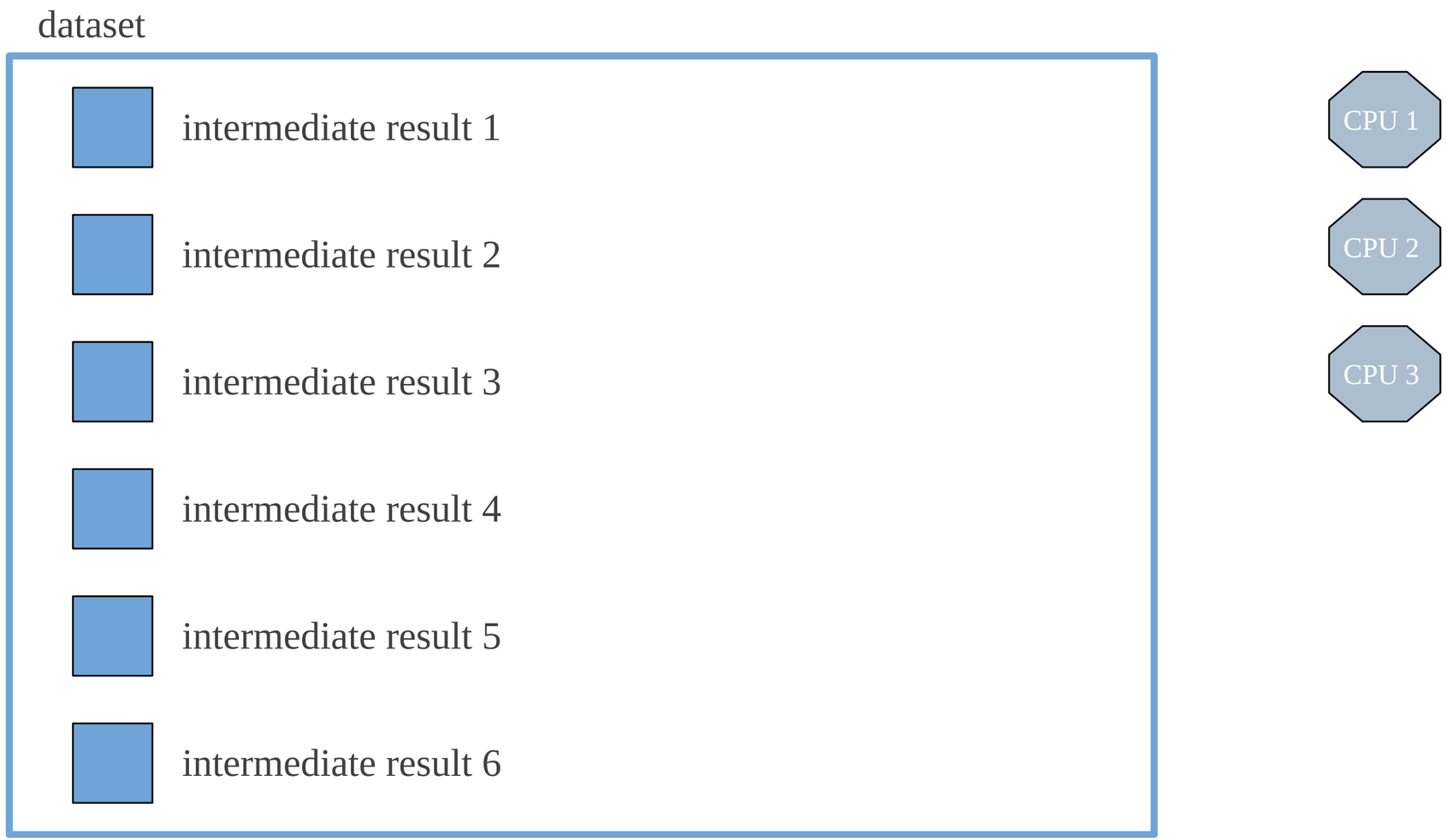

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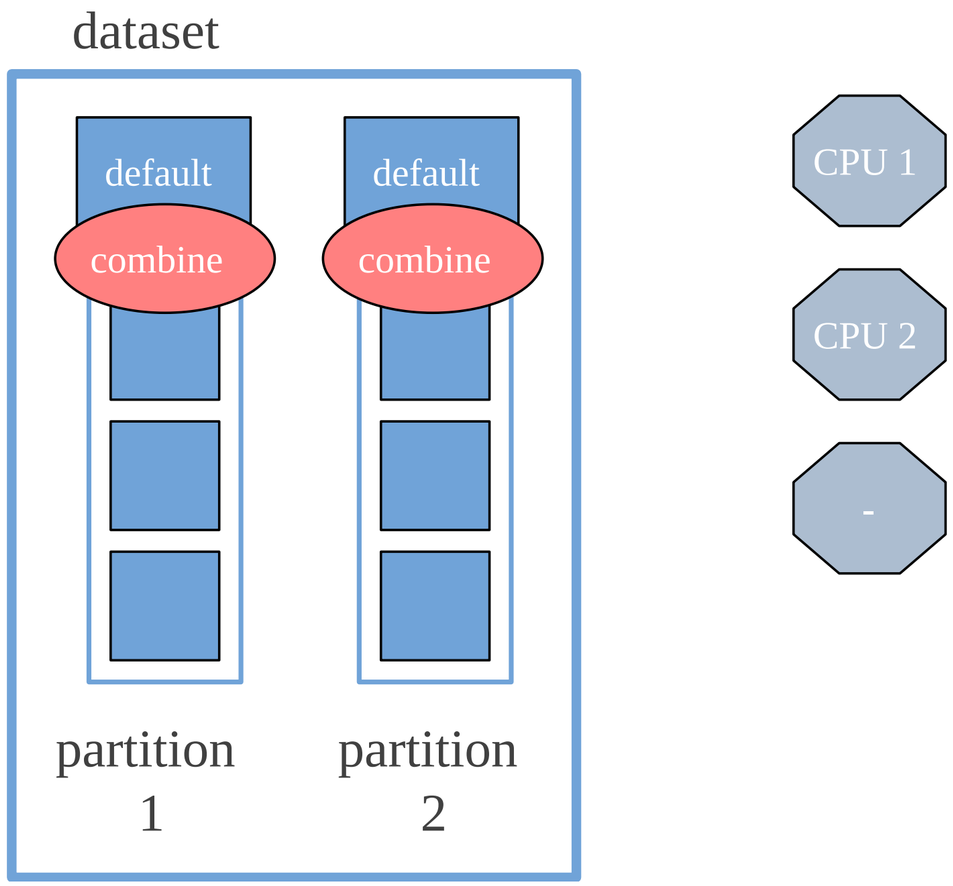

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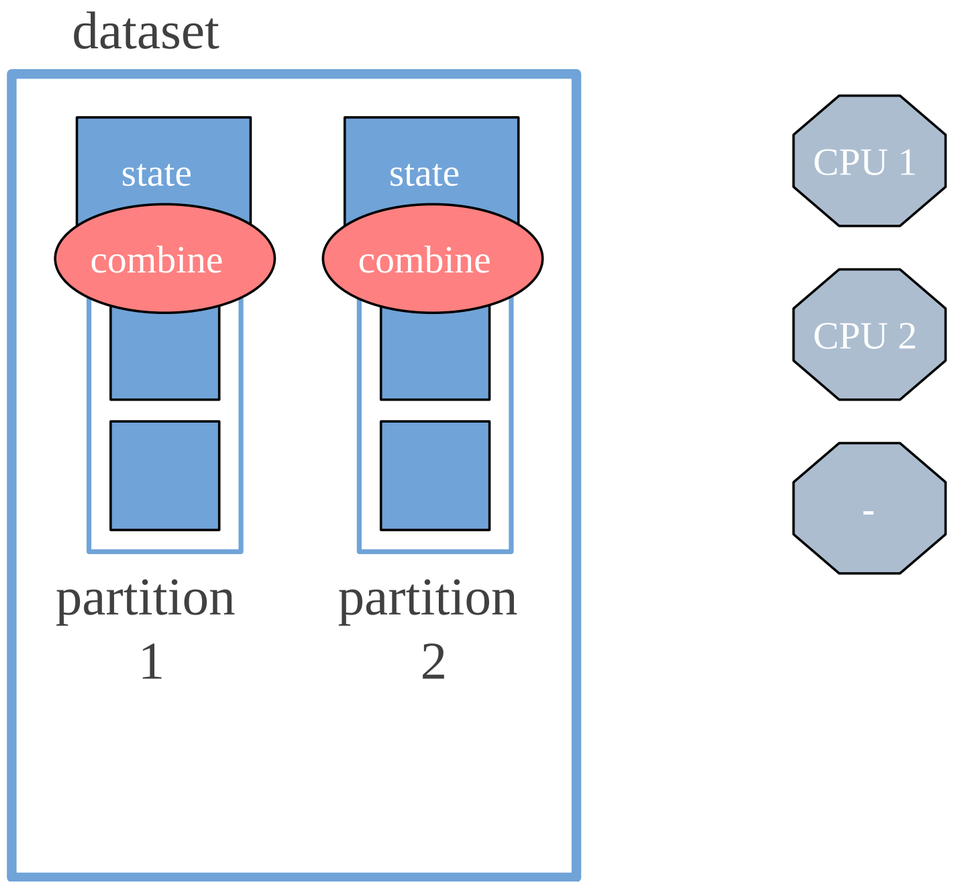

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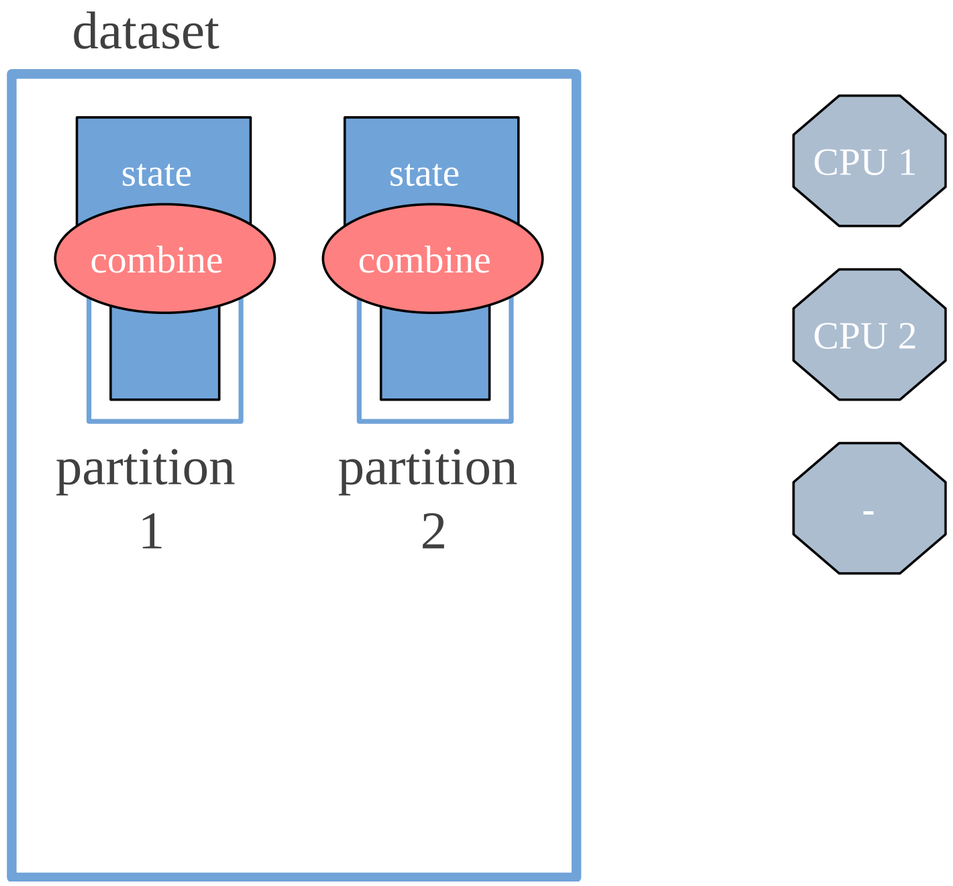

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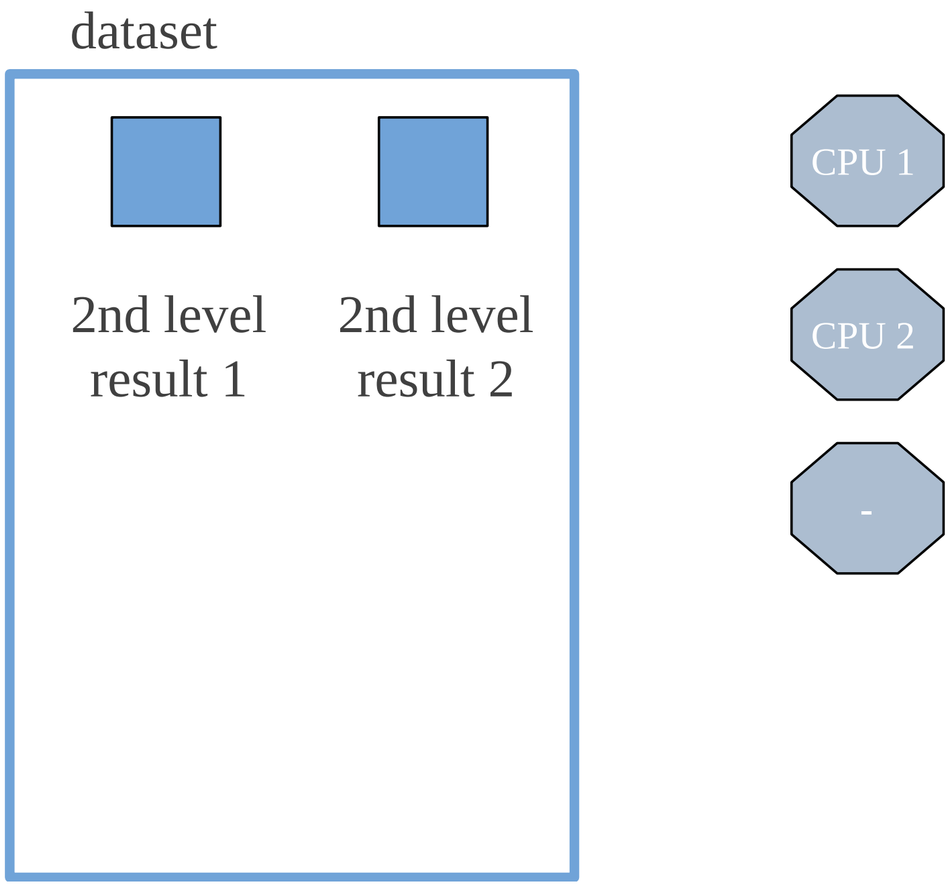

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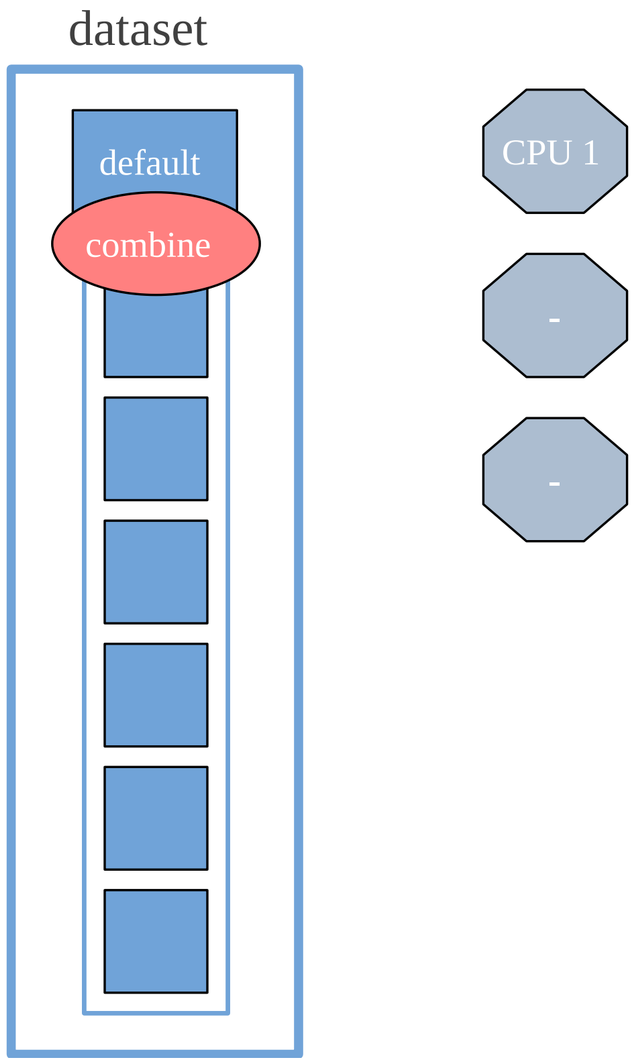

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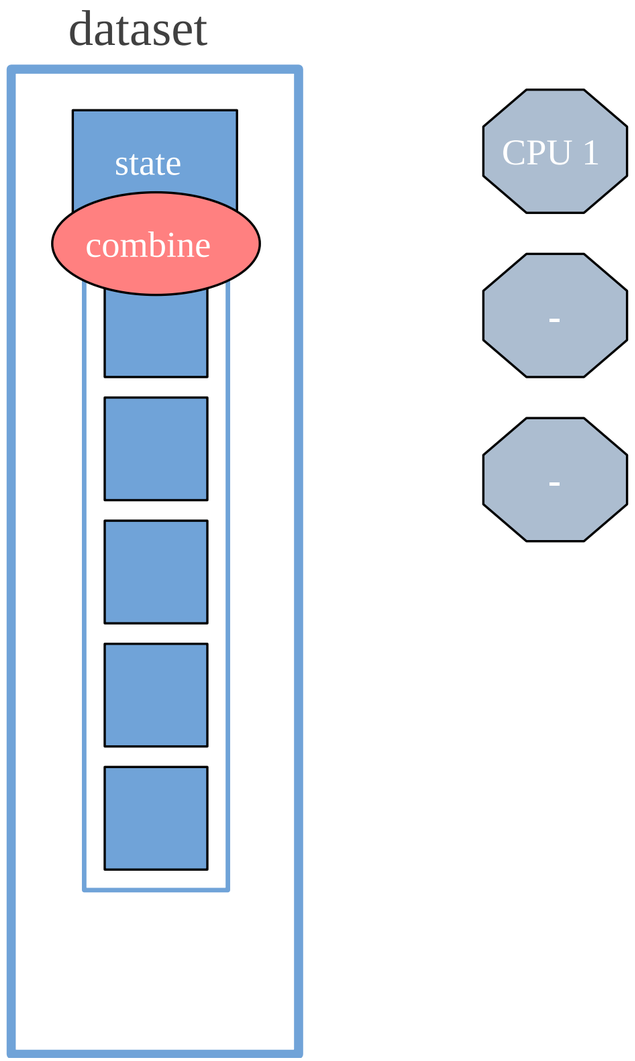

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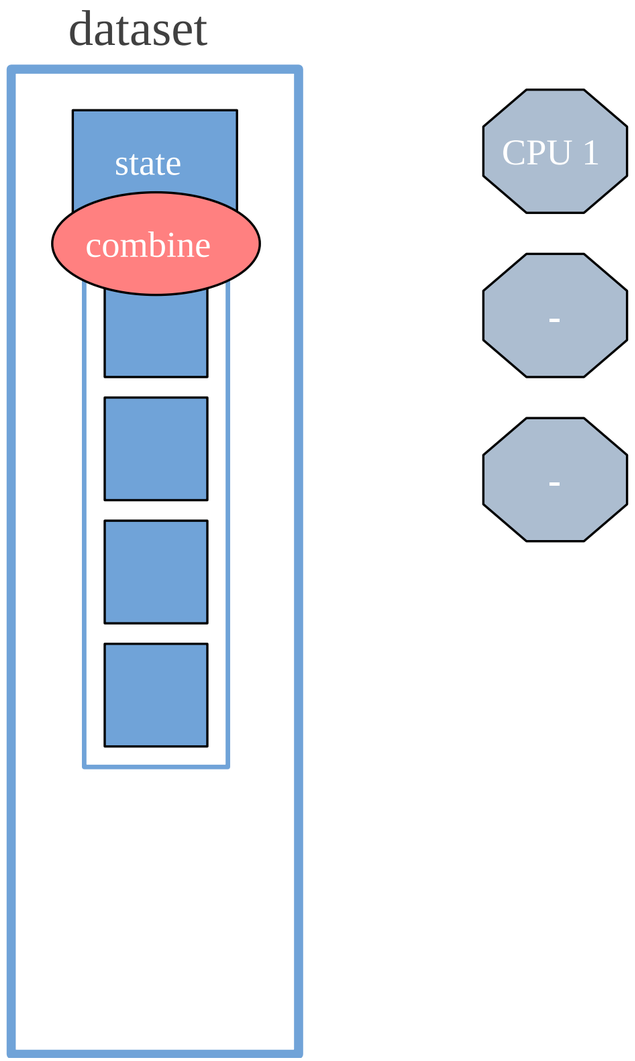

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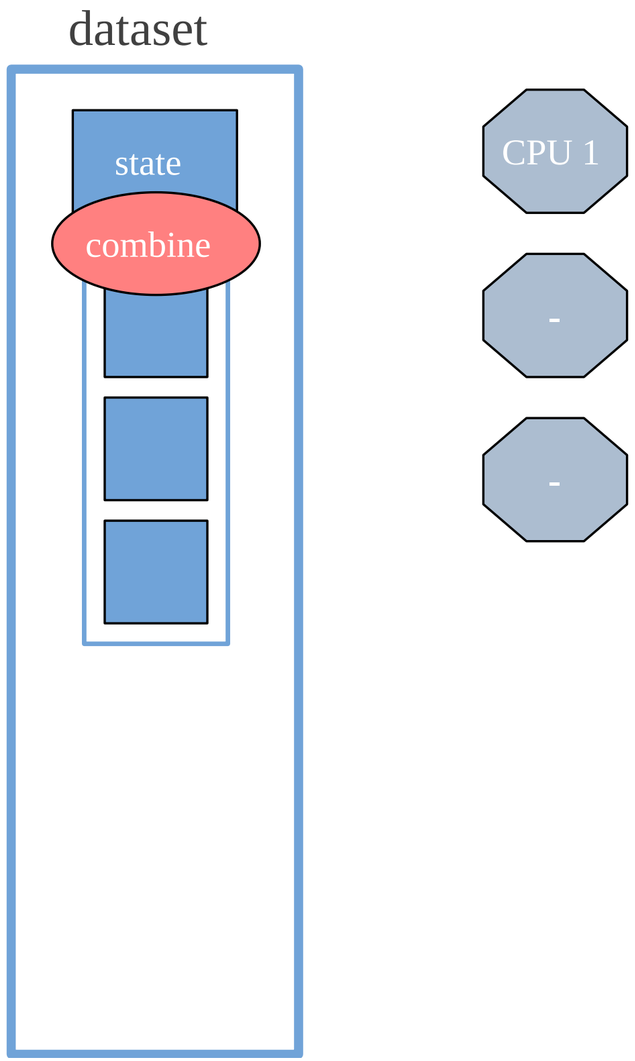

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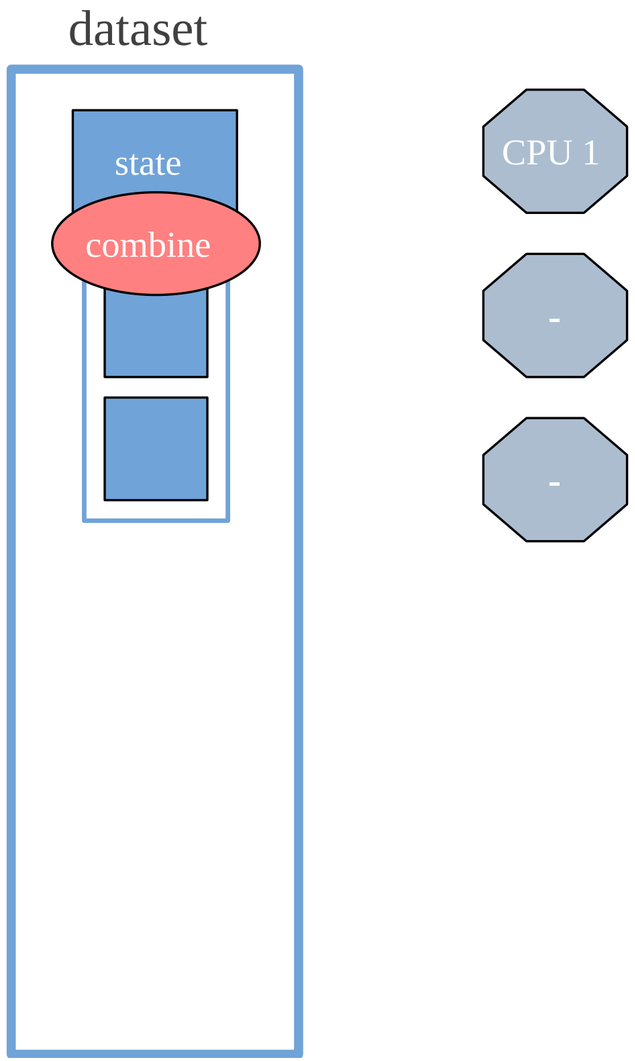

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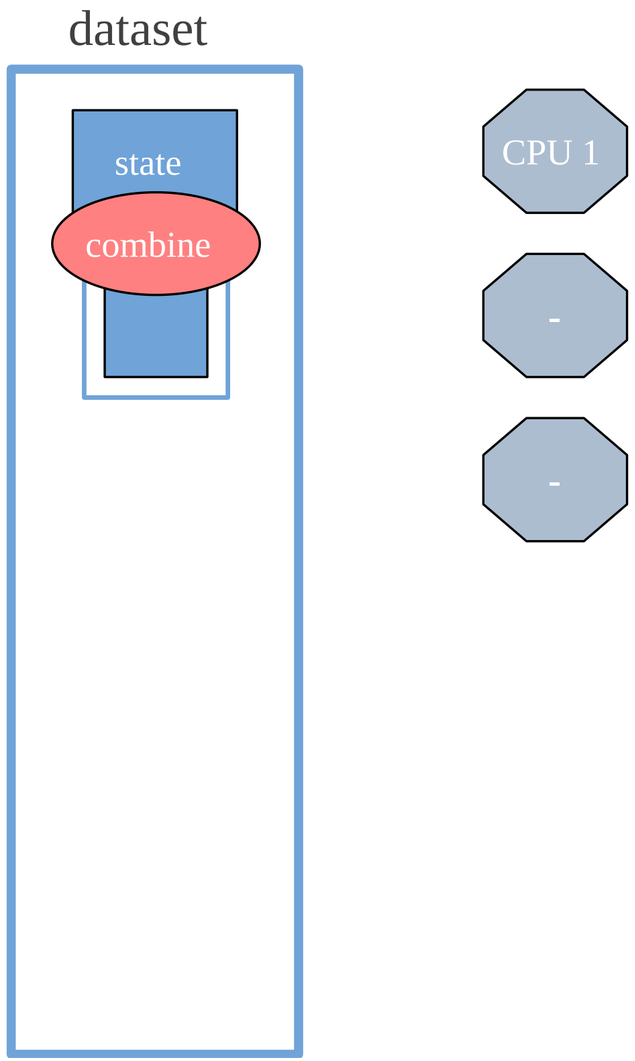

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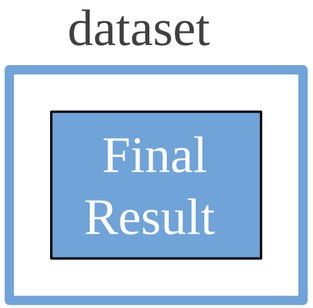


Thread

```
def createThread(n: Int): Thread = new Thread {
  override def run(): Unit =
    println(s"Thread ${n}")
}

val threads = 1.to(4).map(createThread)
```

```
threads.foreach(_.start())
// Thread 1
// Thread 3
// Thread 2
// Thread 4
```

Executor and Runnable

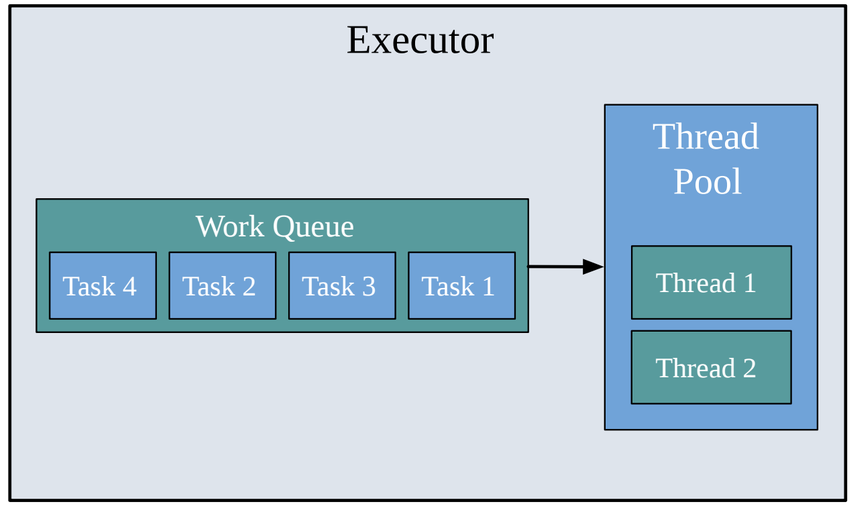
```
import java.util.concurrent.Executors

val fixedPool = Executors.newFixedThreadPool(2)

def createRunnable(n: Int): Runnable =
  new Runnable {
    def run(): Unit =
      println(s"Runnable ${n}")
  }

val runnables = 1.to(4).map(createRunnable)
```

```
runnables.foreach(fixedPool.submit)
// Runnable 1
// Runnable 3
// Runnable 2
// Runnable 4
```



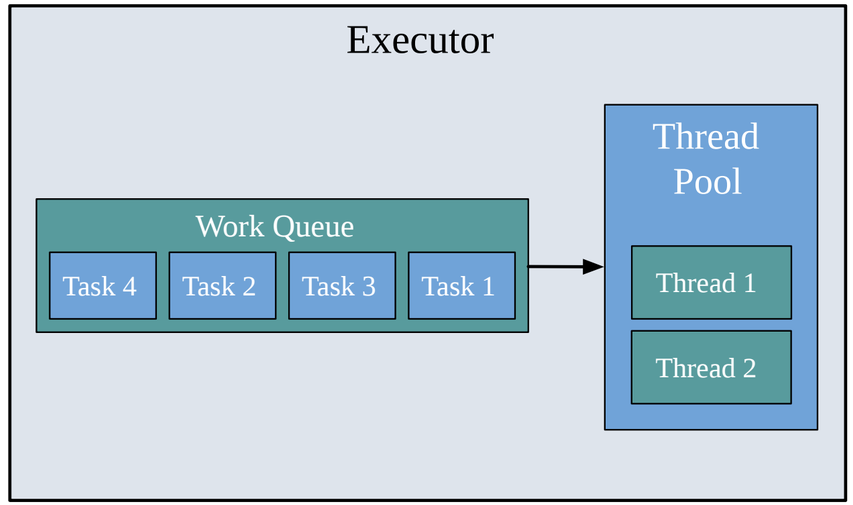
Executor and Runnable

```
import java.util.concurrent.Executors

val fixedPool = Executors.newFixedThreadPool(2)

def createRunnable(n: Int): Runnable =
  new Runnable {
    def run(): Unit = {
      val thread = Thread.currentThread
      println(s"[${thread.getName}] Runnable ${n}")
    }
  }

val runnables = 1.to(4).map(createRunnable)
```




```
runnables.foreach(fixedPool.submit)
// [pool-19-thread-1] Runnable 1
// [pool-19-thread-2] Runnable 3
// [pool-19-thread-1] Runnable 2
// [pool-19-thread-2] Runnable 4
```

ExecutionContext and Future

```
import java.util.concurrent.Executors
import scala.concurrent.duration._
import scala.concurrent.{ Await, ExecutionContext, Future }

val fixedPool        = Executors.newFixedThreadPool(2)
val executionContext = ExecutionContext.fromExecutor(fixedPool)
```

```
val future = Future {
  Thread.sleep(1000)  // sleep 1 second
  1
}(executionContext)
// future: Future[Int] = Future(<not completed>)
```

ExecutionContext and Future

```
import java.util.concurrent.Executors
import scala.concurrent.duration._
import scala.concurrent.{ Await, ExecutionContext, Future }

val fixedPool                   = Executors.newFixedThreadPool(2)
implicit val executionContext = ExecutionContext.fromExecutor(fixedPool)
```

```
val task = Future {
  Thread.sleep(1000)  // sleep 1 second
  3
}
// task: Future[Int] = Future(<not completed>)
```

ExecutionContext and Future

```
import java.util.concurrent.Executors
import scala.concurrent.duration._
import scala.concurrent.{ Await, ExecutionContext, Future }

val fixedPool                   = Executors.newFixedThreadPool(2)
implicit val executionContext = ExecutionContext.fromExecutor(fixedPool)
```

```
val task = Future {
  Thread.sleep(1000)  // sleep 1 second
  3
}
// task: Future[Int] = Future(<not completed>)
```

```
Await.result(task, 2.minutes)
// res: Int = 3
```

ExecutionContext and Future

```
import java.util.concurrent.Executors
import scala.concurrent.duration._
import scala.concurrent.{ Await, ExecutionContext, Future }

val fixedPool                   = Executors.newFixedThreadPool(2)
implicit val executionContext = ExecutionContext.fromExecutor(fixedPool)
```

```
val task = Future {
  Thread.sleep(1000 * 60 * 5)  // sleep 5 minutes
  3
}
// task: Future[Int] = Future(<not completed>)
```

```
Await.result(task, 2.minutes)
// java.util.concurrent.TimeoutException:
//   Future timed out after [2 minutes]
```

ExecutionContext and Future

```
import java.util.concurrent.Executors
import scala.concurrent.duration._
import scala.concurrent.{ Await, ExecutionContext, Future }

val fixedPool                   = Executors.newFixedThreadPool(2)
implicit val executionContext = ExecutionContext.fromExecutor(fixedPool)
```

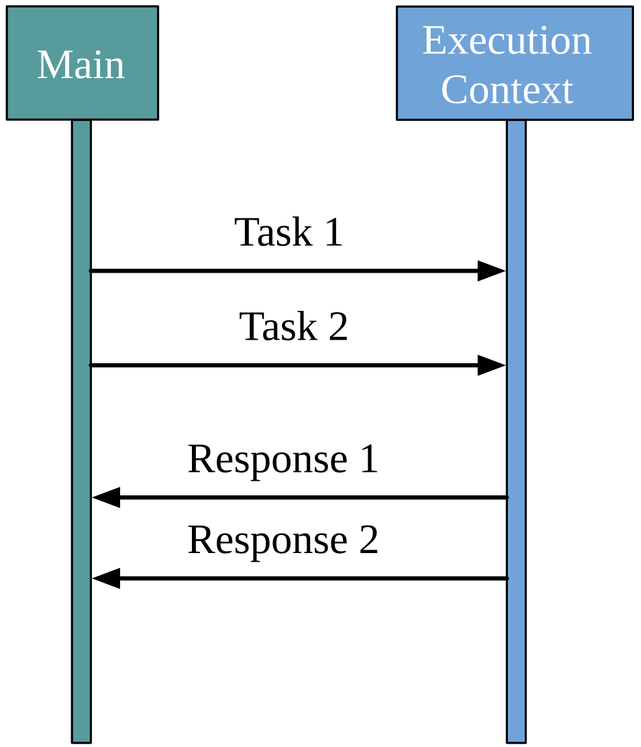
```
val task = Future {
  Thread.sleep(1000 * 60 * 5)  // sleep 5 minutes
  3
}
// task: Future[Int] = Future(<not completed>)
```

```
Await.result(task, Duration.Inf)
// res: Int = 3
```

ExecutionContext and Future

```
val future1   = Future { task(1) }
val future2   = Future { task(2) }

val response1 = Await.result(future1, Duration.Inf)
val response2 = Await.result(future2, Duration.Inf)
```



ExecutionContext and Future

```
val future1   = Future { task(1) }
val response1 = Await.result(future1, Duration.Inf)

val future2   = Future { task(2) }
val response2 = Await.result(future2, Duration.Inf)
```