



SYSTEMY ROZPROSZONE

LABORATORIUM 4

AKKA

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1. Zadanie 1 - strategie obsługi błędów

Testy zostały przeprowadzone dla trzech strategii (dla czytelności skrócono treść wyjątku):

1.1. stop()

```
actorMultiply - operationCount: 1
actorDivide - operationCount: 1
actorDivide - operationCount: 2
actorMultiply - operationCount: 2
[actorMath-akka.actor.default-dispatcher-6] ERROR akka.actor.typed.Behavior$ - Supervisor StopSupervisor saw
↳ failure: / by zero
java.lang.ArithmeticException: / by zero
    at Z1.MathActorDivide.onMathCommandDivide(MathActorDivide.java:28)
actorMultiply - operationCount: 3
actorMultiply - operationCount: 4
[actorMath-akka.actor.default-dispatcher-6] INFO akka.actor.LocalActorRef - Message
↳ [Z1.MathActor$MathCommandDivide] to Actor[akka://actorMath/user/actorDivide#303956245] was not delivered. [1]
↳ dead letters encountered. If this is not an expected behavior then
↳ Actor[akka://actorMath/user/actorDivide#303956245] may have terminated unexpectedly. This logging can be
↳ turned off or adjusted with configuration settings 'akka.log-dead-letters' and
↳ 'akka.log-dead-letters-during-shutdown'.
[actorMath-akka.actor.default-dispatcher-6] INFO akka.actor.LocalActorRef - Message
↳ [Z1.MathActor$MathCommandDivide] to Actor[akka://actorMath/user/actorDivide#303956245] was not delivered. [2]
↳ dead letters encountered. If this is not an expected behavior then
↳ Actor[akka://actorMath/user/actorDivide#303956245] may have terminated unexpectedly. This logging can be
↳ turned off or adjusted with configuration settings 'akka.log-dead-letters' and
↳ 'akka.log-dead-letters-during-shutdown'.
```

Aktor odpowiedzialny za obsługę dzielenia zakończył swoje działanie i nie przyjmował dalszych zleceń.

1.2. resume()

```
actorDivide - operationCount: 1
actorMultiply - operationCount: 1
actorMultiply - operationCount: 2
actorDivide - operationCount: 2
[actorMath-akka.actor.default-dispatcher-6] ERROR akka.actor.typed.Behavior$ - Supervisor ResumeSupervisor saw
↳ failure: / by zero
java.lang.ArithmeticException: / by zero
    at Z1.MathActorDivide.onMathCommandDivide(MathActorDivide.java:28)
actorMultiply - operationCount: 3
actorMultiply - operationCount: 4
actorDivide - operationCount: 3
actorDivide - operationCount: 4
```

Aktor odpowiedzialny za obsługę dzielenia wznowił swoje działanie i obsłużył swoje dalsze zadania.

1.3. restart()

```
actorMultiply - operationCount: 1
actorDivide - operationCount: 1
actorMultiply - operationCount: 2
actorDivide - operationCount: 2
[actorMath-akka.actor.default-dispatcher-6] INFO akka.event.slf4j.Slf4jLogger - Slf4jLogger started
[actorMath-akka.actor.default-dispatcher-3] ERROR akka.actor.typed.Behavior$ - Supervisor RestartSupervisor saw
↳ failure: / by zero
java.lang.ArithmeticException: / by zero
    at Z1.MathActorDivide.onMathCommandDivide(MathActorDivide.java:28)
actorMultiply - operationCount: 3
actorMultiply - operationCount: 4
actorDivide - operationCount: 1
actorDivide - operationCount: 2
```

Aktor odpowiedzialny za obsługę dzielenia został zastąpiony nową instancją, która obsłużyła nowe zlecenia.

2. Zadanie 2 - klasteryzacja

Kod został uzupełniony zgodnie z wytycznymi w instrukcji. Uruchomienie Z2_Main dało następujące wyniki:

```
[z2main-akka.actor.default-dispatcher-7] INFO akka.event.slf4j.Slf4jLogger - Slf4jLogger started
akka://z2main/user/upper1 registered
akka://z2main/user/upper2 registered
creating receive for text service
request: hello
sending to worker: Actor[akka://z2main/user/upper1#1797504143]
sending to worker: Actor[akka://z2main/user/upper2#-723522103]
HELLO
HELLO
```

Aktorzy są poprawnie rejestrowani u recepcjonisty, a następnie każdy z nich przetwarza otrzymane zlecenie i wypisuje wynik - w tym wypadku tekst zapisany wielkimi literami.

Następnie uzupełniłem i uruchomiłem pliki Z2_NodeA oraz Z2_NodeB.

Z2_NodeA:

```
Node A: config:
↳ Config(SimpleConfigObject({"akka":{"actor":{"provider":"cluster"},"cluster":{"downing-provider-class":"akka.cluster.sbr
↳ .SplitBrainResolverProvider","seed-nodes":["akka://ClusterSystem@127.0.0.1:2551","akka://ClusterSystem@127.0.0.1:2552"]}}
↳ ,"remote":{"artery":{"canonical":{"hostname":"127.0.0.1","port":2551}}}}}))
[ClusterSystem-akka.actor.default-dispatcher-3] INFO akka.remote.artery.tcp.ArteryTcpTransport - Remoting started
↳ with transport [Artery tcp]; listening on address [akka://ClusterSystem@127.0.0.1:2551] with UID
↳ [-33207825660936946]
[ClusterSystem-akka.actor.default-dispatcher-3] INFO akka.cluster.Cluster - Cluster Node
↳ [akka://ClusterSystem@127.0.0.1:2551] - Starting up, Akka version [2.6.14] ...
[ClusterSystem-akka.actor.default-dispatcher-3] INFO akka.cluster.Cluster - Cluster Node
↳ [akka://ClusterSystem@127.0.0.1:2551] - Registered cluster JMX MBean [akka:type=Cluster]
[ClusterSystem-akka.actor.default-dispatcher-3] INFO akka.cluster.Cluster - Cluster Node
↳ [akka://ClusterSystem@127.0.0.1:2551] - Started up successfully
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.sbr.SplitBrainResolver - SBR started. Config:
↳ strategy [KeepMajority], stable-after [20 seconds], down-all-when-unstable [15 seconds], selfUniqueAddress
↳ [akka://ClusterSystem@127.0.0.1:2551#-33207825660936946], selfDc [default].
akka://ClusterSystem/user/actor1 registered
akka://ClusterSystem/user/actor2 registered
```

```

[ClusterSystem-akka.actor.default-dispatcher-15] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2551] - Node [akka://ClusterSystem@127.0.0.1:2551] is JOINING itself (with
→ roles [dc-default], version [0.0.0]) and forming new cluster
[ClusterSystem-akka.actor.default-dispatcher-15] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2551] - is the new leader among reachable nodes (more leaders may exist)
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2551] - Leader is moving node [akka://ClusterSystem@127.0.0.1:2551] to [Up]
[ClusterSystem-akka.actor.default-dispatcher-15] INFO akka.cluster.sbr.SplitBrainResolver - This node is now the
→ leader responsible for taking SBR decisions among the reachable nodes (more leaders may exist).
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2551] - Received InitJoin message from
→ [Actor[akka://ClusterSystem@127.0.0.1:2552/system/cluster/core/daemon/joinSeedNodeProcess-1#-1035995034]] to
→ [akka://ClusterSystem@127.0.0.1:2551]
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2551] - Sending InitJoinAck message from node
→ [akka://ClusterSystem@127.0.0.1:2551] to
→ [Actor[akka://ClusterSystem@127.0.0.1:2552/system/cluster/core/daemon/joinSeedNodeProcess-1#-1035995034]]
→ (version [2.6.14])
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2551] - Node [akka://ClusterSystem@127.0.0.1:2552] is JOINING, roles
→ [dc-default], version [0.0.0]
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2551] - Leader is moving node [akka://ClusterSystem@127.0.0.1:2552] to [Up]
HELLO
HELLO

```

Z2_NodeB:

Node B: config:

```

→ Config(SimpleConfigObject({"akka":{"actor":{"provider":"cluster"},"cluster":{"downing-provider-class":"akka.cluster
→ .sbr.SplitBrainResolverProvider","seed-nodes":["akka://ClusterSystem@127.0.0.1:2551",
→ "akka://ClusterSystem@127.0.0.1:2552"]},"remote":{"artery":{"canonical":{"hostname":"127.0.0.1","port":2552}}}}}))
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.event.slf4j.Slf4jLogger - Slf4jLogger started
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.remote.artery.tcp.ArteryTcpTransport - Remoting started
→ with transport [Artery tcp]; listening on address [akka://ClusterSystem@127.0.0.1:2552] with UID
→ [-9092542542576076019]
[ClusterSystem-akka.actor.default-dispatcher-12] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2552] - Starting up, Akka version [2.6.14] ...
[ClusterSystem-akka.actor.default-dispatcher-3] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2552] - Registered cluster JMX MBean [akka:type=Cluster]
[ClusterSystem-akka.actor.default-dispatcher-3] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2552] - Started up successfully
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.sbr.SplitBrainResolver - SBR started. Config:
→ strategy [KeepMajority], stable-after [20 seconds], down-all-when-unstable [15 seconds], selfUniqueAddress
→ [akka://ClusterSystem@127.0.0.1:2552#-9092542542576076019], selfDc [default].
creating receive for text service
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2552] - Received InitJoin message from
→ [Actor[akka://ClusterSystem@127.0.0.1:2551/system/cluster/core/daemon/firstSeedNodeProcess-1#1936180322]],
→ but this node is not initialized yet
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2552] - Received InitJoin message from
→ [Actor[akka://ClusterSystem@127.0.0.1:2551/system/cluster/core/daemon/firstSeedNodeProcess-1#1936180322]],
→ but this node is not initialized yet
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2552] - Received InitJoin message from
→ [Actor[akka://ClusterSystem@127.0.0.1:2551/system/cluster/core/daemon/firstSeedNodeProcess-1#1936180322]],
→ but this node is not initialized yet
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2552] - Received InitJoin message from
→ [Actor[akka://ClusterSystem@127.0.0.1:2551/system/cluster/core/daemon/firstSeedNodeProcess-1#1936180322]],
→ but this node is not initialized yet
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.Cluster - Cluster Node
→ [akka://ClusterSystem@127.0.0.1:2552] - Received InitJoin message from
→ [Actor[akka://ClusterSystem@127.0.0.1:2551/system/cluster/core/daemon/firstSeedNodeProcess-1#1936180322]],
→ but this node is not initialized yet

```

```
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.Cluster - Cluster Node
↳ [akka://ClusterSystem@127.0.0.1:2552] - Received InitJoinAck message from
↳ [Actor[akka://ClusterSystem@127.0.0.1:2551/system/cluster/core/daemon#-1857672861]] to
↳ [akka://ClusterSystem@127.0.0.1:2552]
[ClusterSystem-akka.actor.default-dispatcher-6] INFO akka.cluster.Cluster - Cluster Node
↳ [akka://ClusterSystem@127.0.0.1:2552] - Welcome from [akka://ClusterSystem@127.0.0.1:2551]
request: hello
sending to worker: Actor[akka://ClusterSystem@127.0.0.1:2551/user/actor2#-850834751]
sending to worker: Actor[akka://ClusterSystem@127.0.0.1:2551/user/actor1#-1442025247]
```

Także w tym przykładzie udało się uzyskać pożądany efekt - serwis rozesłał zlecenia do workerów, którzy przetworzyli dane.