

# Akka-Homework: LargeMessageProxy and Password Cracking

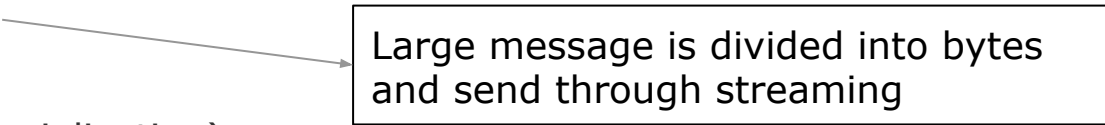
Samik and Tanja

# Large Message Proxy - Message Sending Protocol

1. LargeMessage (Serialization)
2. MasterInquiryMessage
3. ConfigurationMessage (Streaming with Sink and Source)

```
Sink.actorRefWithAck(akka.actor.ActorRef ref,  
                     @Nullable Object onInitMessage,  
                     Object ackMessage,  
                     Object onCompleteMessage,  
                     @Nullable onFailureMessage)
```

- a. StreamInitializedMessage
  - i. Ack.INSTANCE  
-> ByteMessage (Deserialization)
- b. StreamcompletedMessage
- c. StreamfailureMessage



Large message is divided into bytes  
and send through streaming

# Password Cracking - Approach

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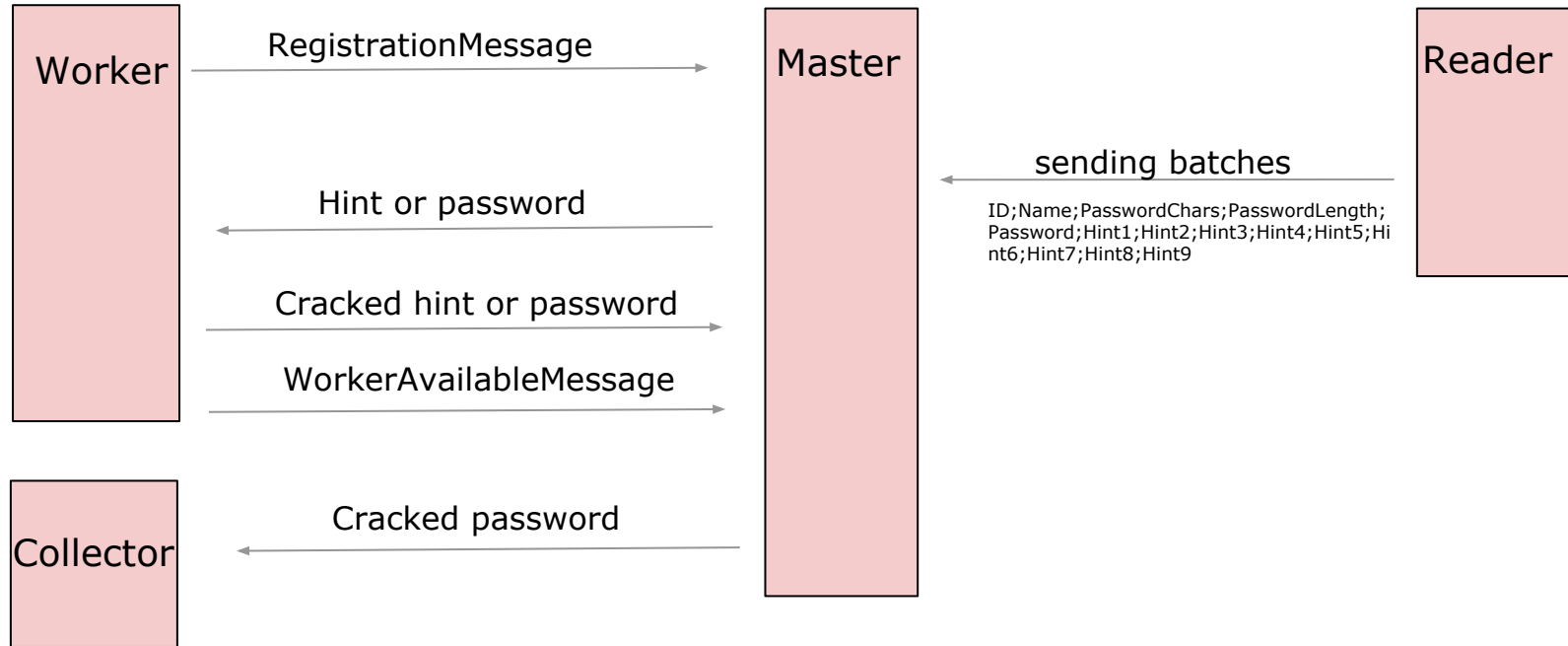
- One worker cracks one password or hint
- Track workers through Arrays of ActorReferences

```
private final List<ActorRef> workers;  
private List<Boolean> workerOccupied;
```

- Queues for Decrypting HintMessages and Decrypting PasswordMessages (FIFO)
- PasswordMessages have priority over HintMessages

```
private Queue<DecryptHintMessage> hintCrackingQueue;  
private Queue<DecryptPassword> passwordCrackingQueue;
```

# Password Cracking - Message Sending Sequence



# Password Cracking - Possible Improvements

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## Right now:

- Every worker decrypts one hint/password at a time  
→ Calculate permutations each time we try to crack a hint/password  
(very inefficient)

## Example:

For each password

99 different combinations

permutation time = 5 sec approximately

total time =  $99 * 5 = 8$  minutes per password approximately

## Solution for this would be:

- Create batches: workers calculate permutations once and test on batches of hints grouped by combinations

# Password Cracking - Possible Improvements

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## **Right now:**

- Tasks are being created per combination (11 tasks per pw)
- Workers compute permutations for each combination
- There is no way of removing tasks from queue when a hint is already cracked
  - So we waste time cracking 8 more hints in the worst case scenario)

## **Solution for this would be:**

- Keep track of the tasks in the hint queue and delete tasks of hints already cracked