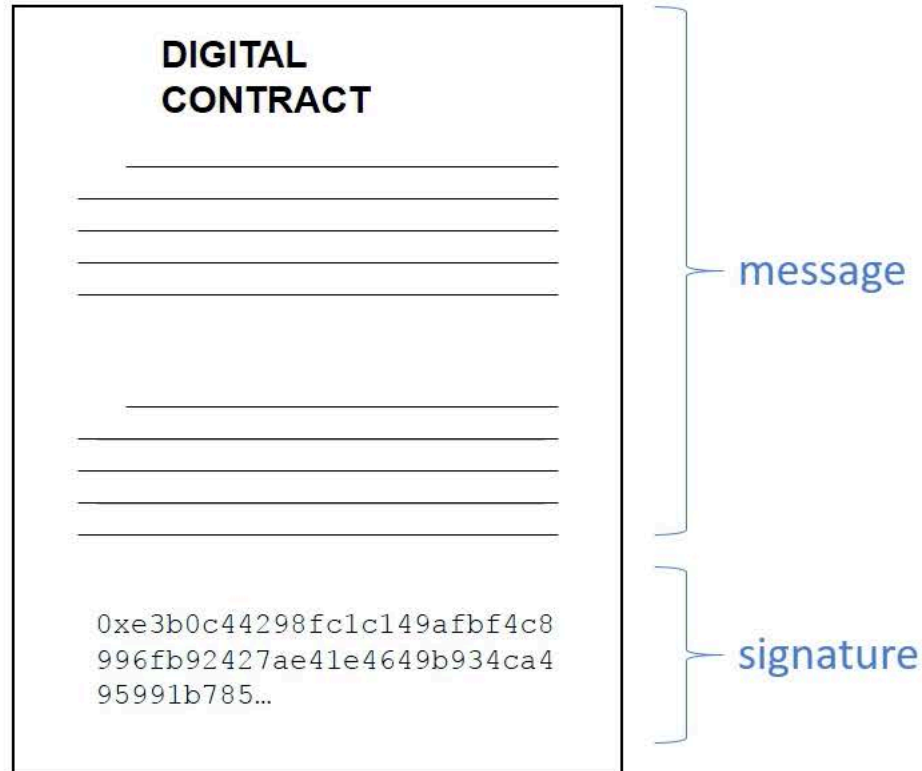


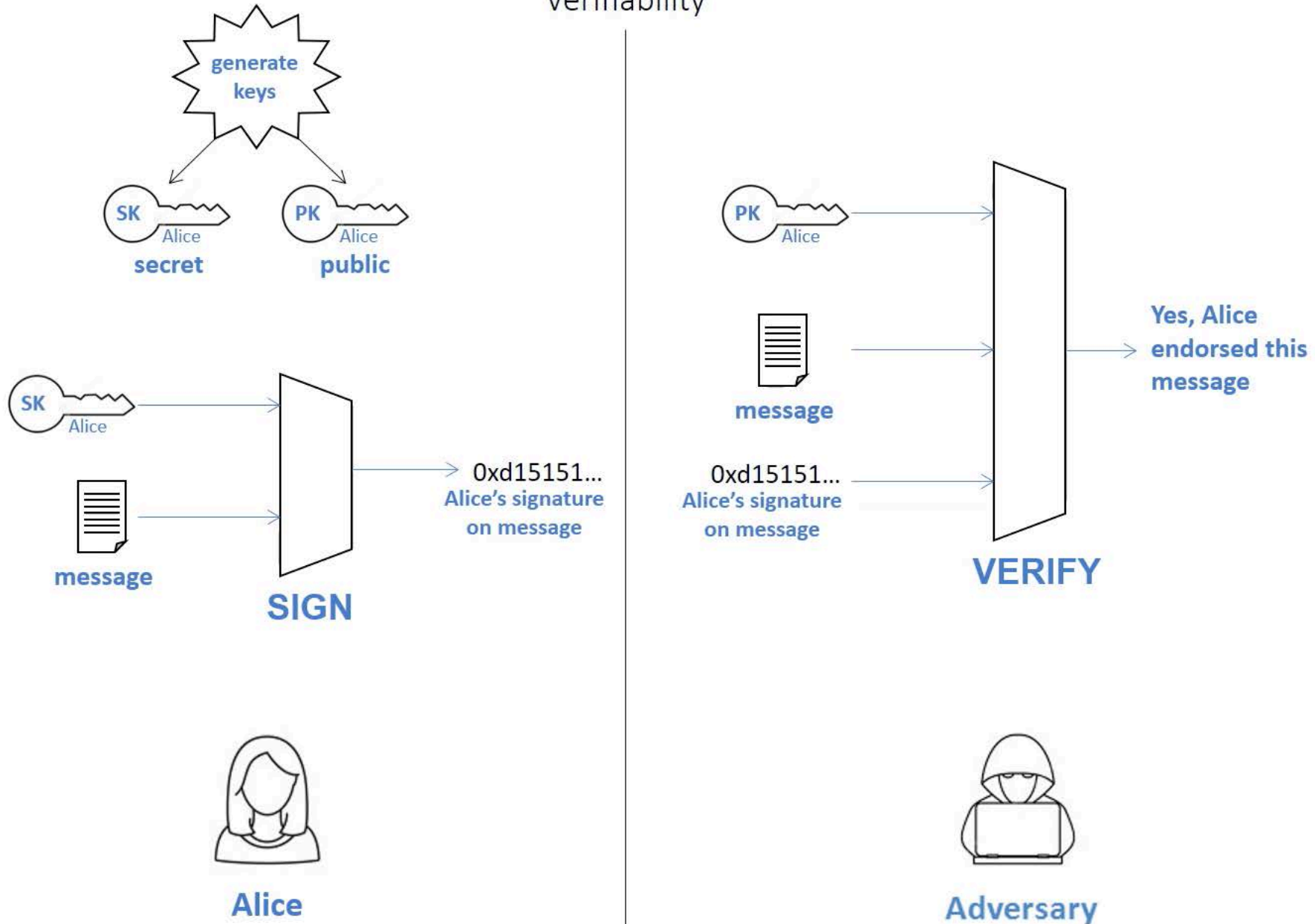
# Digital Signatures

1. **Verifiability**: Only Alice can make her signature, but anyone who sees it can verify that it's valid.
2. **Unforgeability**: The signature is tied to a particular message, so that the signature cannot be used to indicate Alice's endorsement of a different message.



# Digital Signatures

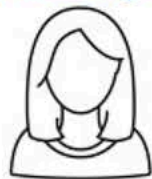
## Verifiability



# Digital Signatures

## Unforgeability Game

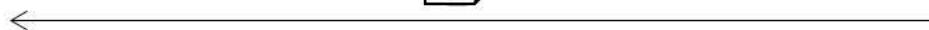
Challenger



Attacker



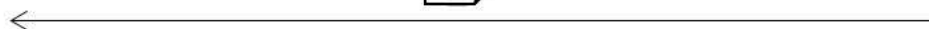
$m_0$



$\text{sign}(\text{sk}, m_0)$



$m_1$



$\text{sign}(\text{sk}, m_1)$



...

$M \mid \text{sig}$



$M$

$M \notin \{m_0, m_1, \dots\}$

$\text{verify}(\text{pk}, M, \text{sig})?$

TRUE

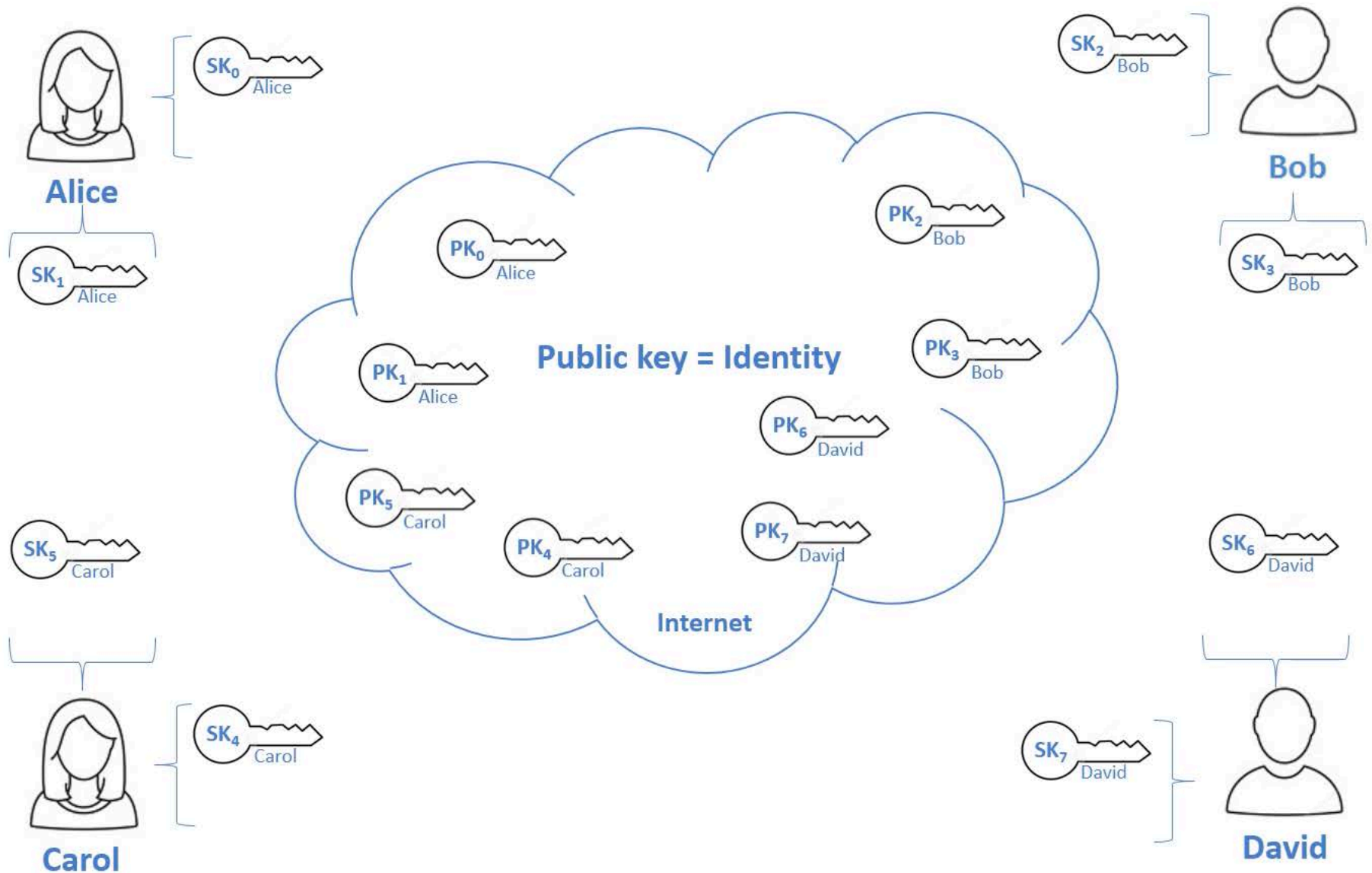
FALSE

attacker  
wins

challenger  
wins

# Decentralized Identity Management

## Public Keys as Identities



**A person can generate multiple public keys, and thus can have multiple identities**