## The Basic Model of Public Key Systems

## **Communication model:**

- 1. Alice generates a pair of keys: **e** (public key) and **d** (private key).
- 2. She keeps **d** secret, but makes **e** public.
- 3. If Bob wants to send a message to Alice, he uses Alice's public key **e**.
- 4. Based on the equation (c = E(e, m)), only Alice can decrypt (c) using her private key, with (m = D(d, c)), where (m) is the message.
- 5. If anyone else wants to send a message to Alice, they can also use her public key **e**.

The system is secure from a decryption perspective because only Alice can decrypt the message, but Alice can never be sure if Bob sent the message, as the public key **e** can be used by anyone.

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