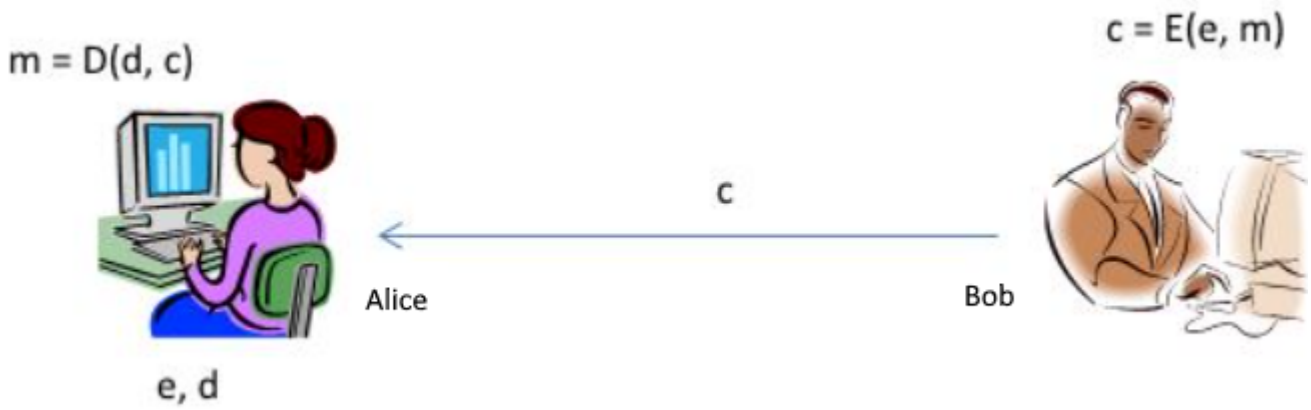
The Basic Model of Public Key Systems

Communication model:



1. Alice generates a pair of keys: **e** (public key) and **d** (private key). In this context **e** means (**e**ncryption key) and **d** (**d**ecryption 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.