**(1.1)**

Healthcare Center (HC)

**(2.3)**

**(1.3)** **(2.2)** **(3.2)**

**(3.1)**

Doctor (D)

Electronic Health Records (EHRs)

**(3.4)**

Cloud Server (CS)

**(3.3)**

**(1.2)**

**(2.1)**

Patient (P)

Electronic Health Records (EHRs)

**(1) System initialization**
**(2) Privacy-preserving doctor recommendation**
**(3) Privacy-preserving fine-grained EHRs sharing**