# Medical prescriptions Blockchain

This is an academic project which aims to use the basic features of plutus smart contracts on the Cardano blockchain to re-inforce what we have learned. We will be using features such as native tokens, onchain validators, offchain code, emulator trace and cardano-cli

## Roles and responsibilities

### Doctor

- Prescribing treatment data (Treatment)
  - Medicines
  - Dosage
  - Frequency
  - Timeframe
  - Doctors pubkey
- Validity period of the prescription
- Identify the Patient (public key)
- Treatment data must be hashed (only the patient should have the prescription)

### Patient

Patient is responsible for

- Identifying the Doctor
- Providing prescription to pharmacy
- Proof of Identification (by signing the transaction)

### Pharmacist

Pharmacist is responsible for

- Validating the prescription
  - The prescription was issued by an authorised doctor (using a database registry)
  - The patient's identity correct (patient signs the transaction)
  - The treatment data match with the prescription (Hash is checked during validation)

## Journey of the prescription

We break the journey of the prescription into 4 steps. Describing each step below will help uncover the requirements of trust and verification

1. Patient identifies a doctor or clinic which is recognized as legitimate. For this step, we must depend on traditional methods of trust such as registration with a local medical authority.
2. When the patient is treated by the identified doctor, the doctor will issue a prescription. When issuing the prescription, the doctor must attach the following.
    1. A Smart contract which will allow the patient to safely redeem the medicines
        - a provable identity of doctor
        - the identity of the patient
        - a signature or hash of the prescription data
        - a validity interval for the prescription
    2. Prescription data which contains the medicines, dosage frequency and duration. The actual prescription data is not necessary to be on the smart contract, but only a hash of the prescription data will be attached. This way the pharmacist will be able to validate if the prescription data for the requested medicines are correct by making a hash.