Upload Images to IPFS

```
cd local_file_path_to_images

curl "https://ipfs.blockfrost.io/api/v0/ipfs/add" \
-X POST \
-H "project_id:api_key" \
-F "file=@./file_name"

curl "https://ipfs.blockfrost.io/api/v0/ipfs/pin/add/ipfs_hash" \
-X POST \
-H "project_id:api_key"
```

> confirm images are pinned
https://ipfs.blockfrost.dev/ipfs/**ipfs_hash**

> Update meta.json files for images

Create & Fund Wallet

```
cd priv
mkdir demo-wallet
cd demo-wallet

cardano-cli address key-gen \
--verification-key-file payment.vkey \
--signing-key-file payment.skey

cardano-cli address build \
--payment-verification-key-file payment.vkey \
--out-file payment.addr \
--mainnet

cat payment.addr
```

> Send funds to address from another wallet

```
cat payment.addr
```

```
cardano-cli query utxo \
--address $(cat payment.addr) \
--mainnet
```

Create Token Policy

```
mkdir policy

cardano-cli address key-gen \
--verification-key-file policy/policy.vkey \
--signing-key-file policy/policy.skey

cardano-cli address key-hash --payment-verification-key-file
policy/policy.vkey
```

> **policy_vkey_hash**

```
mkdir policy/tokens
touch policy/tokens/token_policy.script
nano policy/tokens/token_policy.script

{
    "type": "all",
    "scripts": [
        {
            "keyHash": "policy_vkey_hash",
            "type": "sig"
        }
    ]
}

cardano-cli transaction policyid --script-file
./policy/tokens/token_policy.script > ./policy/tokens/policy.id

cat policy/tokens/policy.id
```

> Paste policy_id into local tokens_meta.json file

```
touch policy/tokens/token_meta.json
nano policy/tokens/token_meta.json
```

> Verify meta on https://pool.pm/test/metadata

> Paste local meta into tokens_meta.json on cardano node

Mint Tokens

```
cardano-cli query utxo \
--address $(cat payment.addr) \
--mainnet
```

> **100e49228b36be2c14e1f92de1326382061815c75ce559ea5a0b4650d6fb1520**

```
cardano-cli transaction build-raw \
--fee 188865 \
--tx-in 100e49228b36be2c14e1f92de1326382061815c75ce559ea5a0b4650d6fb1520#0 \
--tx-out $(cat payment.addr)+4811135+"1000 $(cat
policy/tokens/policy.id).SilverCoin"+"1000 $(cat
policy/tokens/policy.id).GoldCoin" \
--mint="1000 $(cat policy/tokens/policy.id).SilverCoin"+"1000 $(cat
policy/tokens/policy.id).GoldCoin" \
--minting-script-file policy/tokens/token_policy.script \
--metadata-json-file policy/tokens/token_meta.json \
--out-file token_tx.raw

cardano-cli  query protocol-parameters \
--mainnet \
--out-file protocol.json

cardano-cli transaction calculate-min-fee \
--tx-body-file token_tx.raw \
--tx-in-count 1 \
--tx-out-count 1 \
--witness-count 1 \
--byron-witness-count 0 \
--mainnet \
--protocol-params-file protocol.json
```

fee > 188865

```
expr 5000000 - 188865
```

change > 4811135

```
cardano-cli transaction build-raw \
--fee 188865 \
--tx-in 100e49228b36be2c14e1f92de1326382061815c75ce559ea5a0b4650d6fb1520#0
\
--tx-out $(cat payment.addr)+4811135+"1000 $(cat
policy/tokens/policy.id).SilverCoin"+"1000 $(cat
policy/tokens/policy.id).GoldCoin" \
--mint="1000 $(cat policy/tokens/policy.id).SilverCoin"+"1000 $(cat
policy/tokens/policy.id).GoldCoin" \
--minting-script-file policy/tokens/token_policy.script \
--metadata-json-file policy/tokens/token_meta.json \
--out-file token_tx.raw

cardano-cli transaction sign \
--signing-key-file payment.skey \
--signing-key-file policy/policy.skey \
--mainnet \
--tx-body-file token_tx.raw \
--out-file token_tx.signed

cardano-cli transaction submit \
--tx-file  token_tx.signed \
--mainnet
```

Create NFT Policy

```
------------------IF KEYS NOT ALREADY CREATED------------------
mkdir policy

cardano-cli address key-gen \
--verification-key-file policy/policy.vkey \
--signing-key-file policy/policy.skey
---------------------------------------------------------------

cardano-cli address key-hash --payment-verification-key-file
policy/policy.vkey
```

> **policy_vkey_hash**

```
cardano-cli query tip \
--mainnet

expr current_slot + 1800
> invalid_thereafter_slot

mkdir policy/nft
touch policy/nft/nft_policy.script
nano policy/nft/nft_policy.script

{
    "type": "all",
    "scripts": [
        {
            "keyHash": "policy_vkey_hash",
            "type": "sig"
        },
        {
            "type": "before",
            "slot": invalid_thereafter_slot
        }
    ]
}

cardano-cli transaction policyid --script-file
./policy/nft/nft_policy.script > ./policy/nft/policy.id
```

> Paste policy_id into local nft_meta.json file

```
touch policy/nft/nft_meta.json
nano policy/nft/nft_meta.json
```

> Verify meta on https://pool.pm/test/metadata

> Paste local meta into nft_meta.json on cardano node

Mint NFT

```
cardano-cli query utxo \
--address $(cat payment.addr) \
--mainnet
```

> **7c2222071a1fda3d554d36b6ce333f400c9edd4693da5eec104ba90278b3762d**

```
cardano-cli transaction build-raw \
--fee 193749 \
--tx-in 7c2222071a1fda3d554d36b6ce333f400c9edd4693da5eec104ba90278b3762d#0
\
--tx-out $(cat payment.addr)+4617386+"1 $(cat
policy/nft/policy.id).NewNFT"+"1000 $(cat
policy/tokens/policy.id).SilverCoin"+"1000 $(cat
policy/tokens/policy.id).GoldCoin" \
--mint="1 $(cat policy/nft/policy.id).NewNFT" \
--minting-script-file policy/nft/nft_policy.script \
--metadata-json-file policy/nft/nft_meta.json \
--invalid-hereafter=invalid_thereafter_slot \
--out-file nft_tx.raw

cardano-cli  query protocol-parameters \
--mainnet  \
--out-file protocol.json

cardano-cli transaction calculate-min-fee \
--tx-body-file nft_tx.raw \
--tx-in-count 1 \
--tx-out-count 1 \
--witness-count 2 \
--byron-witness-count 0 \
--mainnet \
--protocol-params-file protocol.json
```

fee > 190361

```
expr 4811135 - 190361
```

change > 4620774

```
cardano-cli transaction build-raw \
--fee 196357 \
--tx-in 7c2222071a1fda3d554d36b6ce333f400c9edd4693da5eec104ba90278b3762d#0
\
--tx-out $(cat payment.addr)+4620774+"1 $(cat
policy/nft/policy.id).NewNFT"+"1000 $(cat
policy/tokens/policy.id).SilverCoin"+"1000 $(cat
policy/tokens/policy.id).GoldCoin" \
--mint="1 $(cat policy/nft/policy.id).NewNFT" \
--minting-script-file policy/nft/nft_policy.script \
--metadata-json-file policy/nft/nft_meta.json \
--invalid-hereafter=invalid_thereafter_slot \
--out-file nft_tx.raw

cardano-cli transaction sign \
--signing-key-file payment.skey \
--signing-key-file policy/policy.skey \
--mainnet \
--tx-body-file nft_tx.raw \
--out-file nft_tx.signed

cardano-cli transaction submit \
--tx-file  nft_tx.signed \
--mainnet
```

```
cardano-cli query utxo \
--address $(cat payment.addr) \
--mainnet

cardano-cli transaction build-raw \
--fee 180000 \
--tx-in 422b1dcd3386fed96949968c9a01bdffec22bcd397ef909a7e5889d7aa5730d1#0
\
--tx-out ADDRESS+AMOUNT \
--tx-out $(cat payment.addr)+CHANGE \
--out-file alien_babies_tx.raw

cardano-cli  query protocol-parameters \
--mainnet \
--out-file protocol.json

cardano-cli transaction calculate-min-fee \
--tx-body-file alien_babies_tx.raw \
--tx-in-count 1 \
--tx-out-count 2 \
--witness-count 1 \
--byron-witness-count 0 \
--mainnet \
--protocol-params-file protocol.json

expr 49168049 - AMOUNT - 180000

cardano-cli transaction sign \
--signing-key-file payment.skey \
--mainnet \
--tx-body-file alien_babies_tx.raw \
--out-file alien_babies_tx.signed

cardano-cli transaction submit \
--tx-file  alien_babies_tx.signed \
--mainnet
```