**Q1**
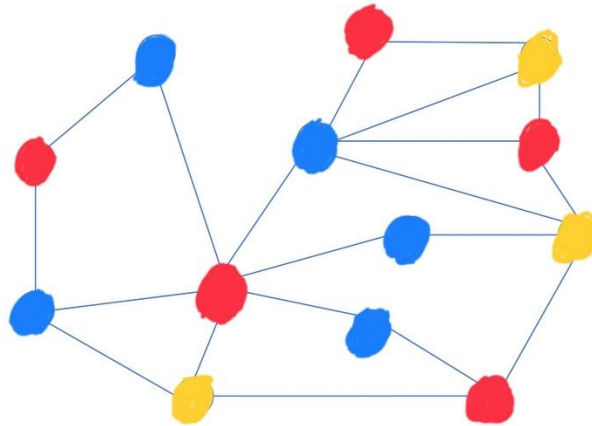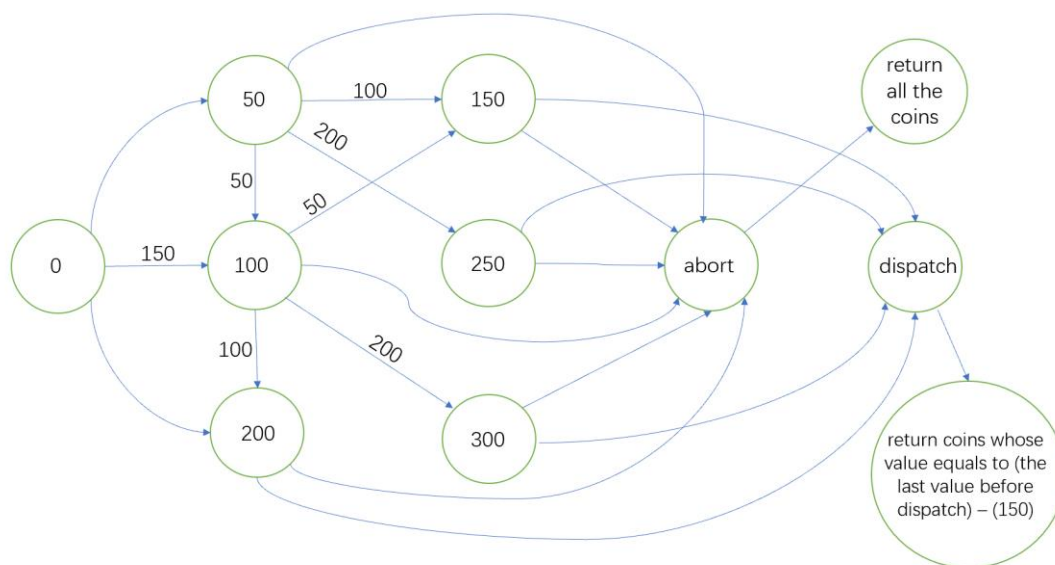
There are obvious triangles in the given graph. In the triangles, the nodes must be painted in three different colors. Therefore, at least three different colors are needed to meet the requirement. Below is an example.
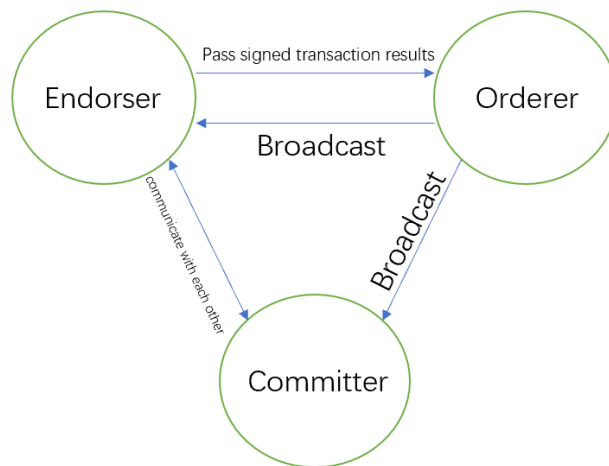


**Q2**



The numbers in the circles refer to the value of the coins that the consumer inserted, and the numbers next to the edges refer to the value of the coin that the consumer can insert to enter a next state. The consumer can choose to abort and get all the inserted coins at any state. Note that if the value of the current state is 150 or more than 150, the consumer can choose to abort before the candy is automatically dispatched.

**Q3**
**a)**

Pass signed transaction results

Endorser

Orderer

Broadcast

Broadcast

communicate with each other

Committer

**b)**



committer

broadcast

bundling into a block

validate

communicate

broadcast

an application

transaction proposal

a blockchain network

select

endorser

orderer

valid transaction

execute the transaction

create a digital signature on the transaction result

update its Ledger