[1] a) Timeout: in this case, each one may submit a bid & highest bidder wins the item at the price he bid.

b) Wait for all: all transactions processed & accounted for before end of day.

c) External event: where petrol cars dispatched when external event occurs & closest car to location is sent to respond.

d) wait for all: all nodes see same data at same time & any updates are propagated to all nodes before being considered complete.

e) Timeout with override: if someone bids more than 100K, he wins. If not, highest bidder under 100K wins.

2. a) publish-subscribe: the Kafka topic serves as publisher & Nifi consumers serves as subscribers.

b) Content-based: router could route messages based on content (type) of transaction.

c). Envelope wrapper: Kafka topic could add envelop to each message to add info (header) or to encrypt.
- Content filter: for security.

d) Event driven Consumer: app automatically consume messages as they become ready.

[3] Credit card system design patterns:

- Channels: publish-subscribe to broadcast notifications to interested parties such as credit card holders.
  point-to-point: communication between card holder & system.
  Invalid message: handle error messages.
  Dead letter: handle & redirect failed messages.
- Routers: Content based to route messages based on content.
  message filter: route message based on predefined criteria
- Content enricher: enhance message content by adding additional info.
- Event-driven consumer: listen for events triggered by actions ex: notify success of transaction.