SC2006

writting SRS (software requirements specification):

Project Inception Statement → Elicit requirements → Analyse requirements → Validate requirements → Software Requirement Specification

Analyse requirements → Analysis model

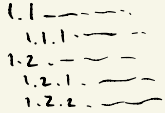
SRS content:
- product desc
  - purpose of system
  - scope of system
  - users n stakeholders
  - Assumptions n constraints
- Functional requirements
- Non-functional requirements
- interface requirements
  - User, HW, SW
- Data Dictionary

- written in natural language, unambiguous, in diagram
- Purpose:
  - give assurance to customer
  - decompose problem to component parts
  - input to design specification (contain sufficient functional requirements)
  - serve as parent / master document for testing and validation strategies

Engineering requires:
- requirements elicitation → (specify what system is going to make, what it will do, how it will do it) → steps:
  1. Identifying Stakeholder
  2. Requirement gathering
  3. Listing out Requirement
  4. Organizing workshop
- design it
- build it
- test it
- release it and maintain it

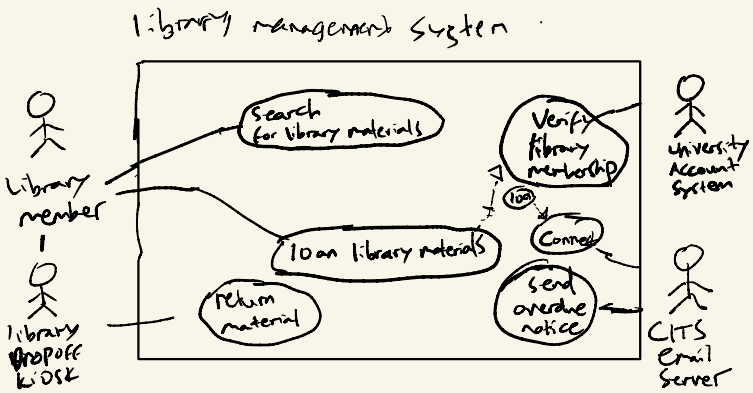
Functional requirement	Non functional requirement → usability, reliability, performance, supportability
• help understand function of the system	• help understand performance of system
• explain characteristic that system expected to have	• explain the way product should behave
• identify what system must/must not do	• identify how system should do it
• allow system to perform even if non functional requirements are not met	• will not work with only non-functional requirement
• system meet user requirement	• product meets user expectation
• essential to system operation	• desirable but not always essential
• straightforward to define n agree on	• harder to define n agree on
• define by user	• define by software engineers, developer, etc.
• can be documented n understood through use case	• can be documented n understood as a quality attribute

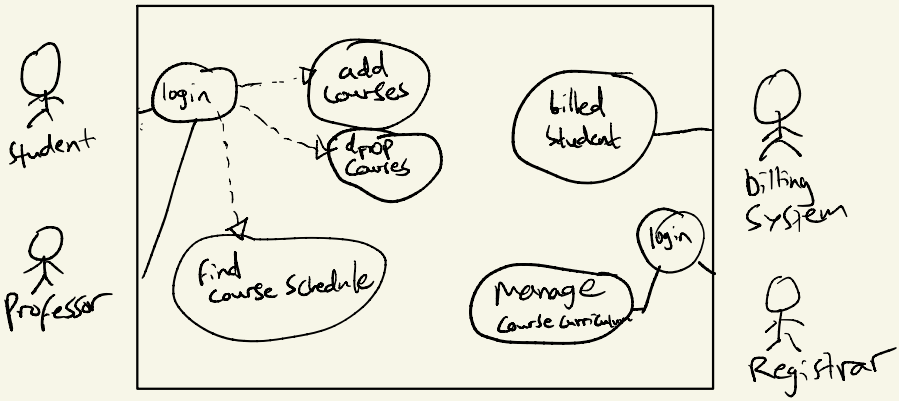
Atomic Requirements → verifiable, traceable, unambiguous
- use points



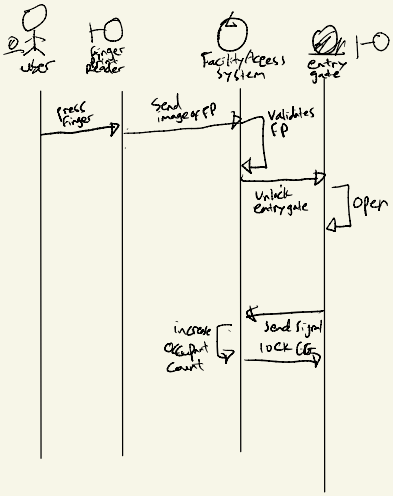
Use case → contains:
- Participating actors
- Entry conditions (pre-condition)
- Exit conditions (post-condition)
- flow of events
- Alternative flows (error by user) wrong password, network not available
- Exceptions (error unexpected) → failed AFSS

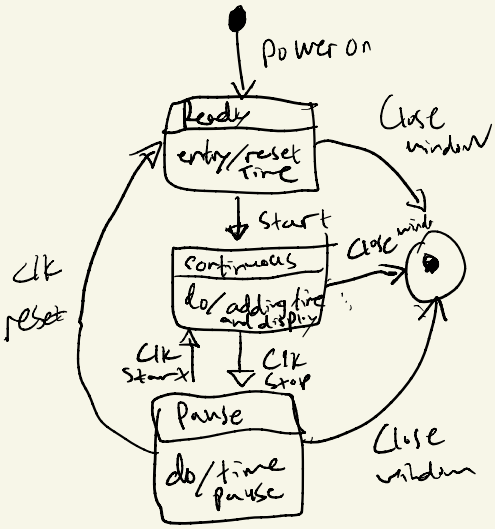
Use case
- Diagram - Static
- Description - Dynamic





Communication → by sequence of
Sequence → by relative position
↳ better for implementation





(0)

1) Diagram
2) agile/sw process
3)
4) blk n white

design pattern?

The Magic Power: Strategy Design + Factory Design + Dynamic Loading

```
public static DataStoreInterface getDatastore(String
classname) {
        DataStoreInterface datastore = null;

        try {
            Class datastoreImpl =
ClassLoader.getSystemClassLoader().loadClass(classname);

            datastore = (DataStoreInterface)
datastoreImpl.newInstance();
        } catch (ClassNotFoundException e) {
            e.printStackTrace();
        } catch (InstantiationException e) {
            e.printStackTrace();
        } catch (IllegalAccessException e) {
            e.printStackTrace();
        }

        return datastore;
    }
```

See 'ruuExtractEclipse.zip' for code example

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See 'ruuExtractEclipse.zip' for code example

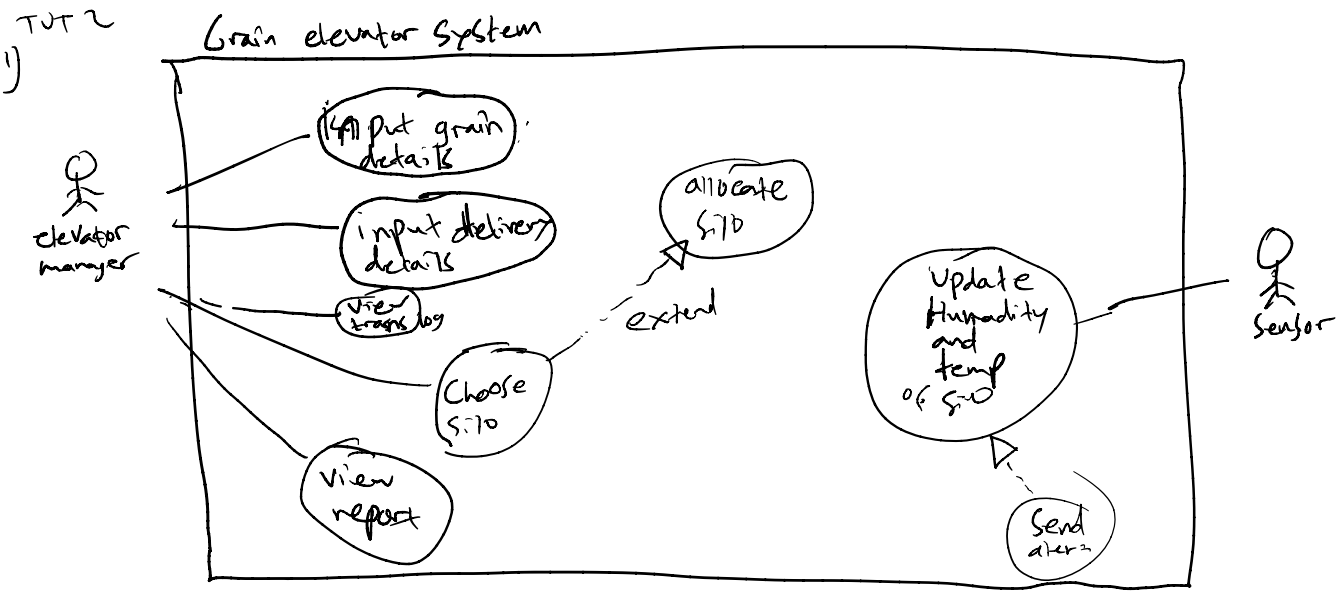
TUT 1 2006

1) 1 User must be able to query
1.1 query result must be done with user number or serial number
1.1.1 a query containing user number must report all the equipment assigned to that user number
1.1.2 a query containing serial number must report the assignment for that computer with that serial number
1.2 All assignment reports must have same format
1.2.1 an assignment report show name, office, and user number

2

TUT 2

1)



A. Harvested grain is trucked from farms to a central storage elevator where it is placed in silos. The grain is eventually moved from the silos to railroad cars that take it to processing plants. The elevator relies on a software system to track the grain.

B. The elevator accepts shipments of wheat, barley, long grain rice, short grain rice, oats, and hops. Each type of grain has two grades, high and low. An empty silo may store any kind of grain, but a silo with grain in it can store only grain of the same type and grade.

C. There are 12 silos in the elevator: silos 1-6 silos hold 8,000 bushels each, and silos 7-12 hold 12,000 bushels each. Each truck carries between 150 and 180 bushels. A single railroad car holds 2,000 bushels.

D. Grain only arrives in trucks from growers selling the grain, and only leaves in rail cars taking it to processing plants buying the grain. Each truck has a plate number, a driver, and a grain seller. Each rail car has a serial number, a conductor, and a grain buyer.

E. Grain stored in the silo must be kept dry. Therefore, the humidity and temperature of each silo are closely monitored. Humidity and temperature sensors in each silo send data to the system periodically. If the temperature or humidity of a silo exceeds normal levels, the humidity and temperature sensors will send an alert to the system, as well as, to an external grain dryer. Until its temperature and humidity levels are brought back to normal, the silo cannot accept any more grain.

Diagram of airflow through a silo

F. For accounting purposes, the system maintains a transaction log that records, for each shipment in or out of the elevator, all the information about the shipment, namely: the quantity, type, and grade of grain, the time and date, the elevator manager, the type of shipment (arrival or departure), the truck or rail car identifier, the driver or conductor, and the seller or buyer.

G. When a truck arrives at the elevator with a load of grain, the elevator manager informs the system of the type of grain, its grade, and its quantity. The system must find one or more silos to store to store the grain and tell the elevator manager which silos it has chosen, and how much grain goes in each one. The system may accept only part of a load if there is not room for the entire load, or none of it if there is no place to store it.

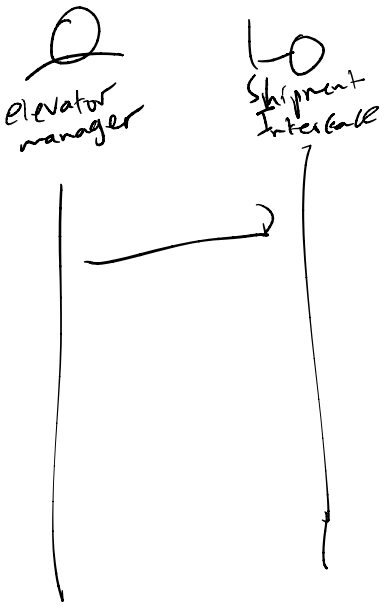
H. The elevator manager may accept or overrule the system's choice of silos for an arriving load of grain. The elevator manager must inform the system how much grain is actually deposited in each silo, and enter data about the truck, the driver, and the seller. The system should acknowledge receipt of this data.

I. As a train is loaded, the elevator manager must tell the system how much grain has been removed from each silo, the rail cars loaded, the conductor, and the buyer. The system should acknowledge receipt of this data.

J. Upon request from the elevator manager, the system must produce a complete report of the state of the elevator. This report should list, for each silo, the type of grain stored, the amount stored, and the remaining capacity of the silo. The report should also list the total remaining capacity of the elevator for each type of grain currently stored, and the total capacity of the elevator not currently committed to any type of grain.

K. Upon request from the elevator manager, the system must produce a chronological listing of the transaction log.

TUT 3



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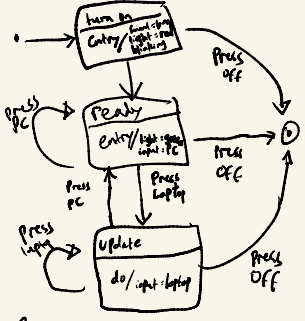
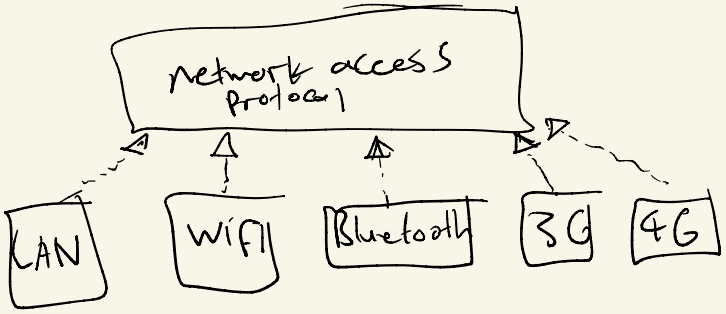


TUT 6

2) a)

b)



TUT 8

1) a) 0-100%

≤35 invalid

35-50% normal humidity

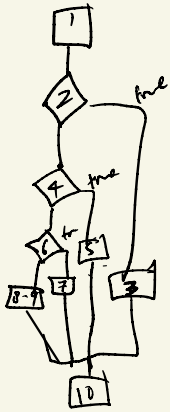
≥50% invalid

10-60 C

10-39 invalid

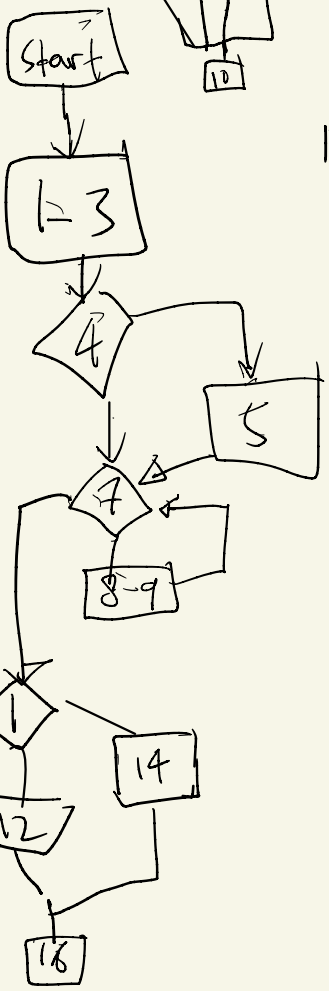
40-60 C normal temp

1, 2, 3, 4, 5, 7, 8, 9, 7, 11, 12, 16 ✓
1, 2, 3, 4, 7, 11, 14, 16
1, 2, 3, 4, 5, 7, 11, 12, 16
1, 2, 3, 4, 7, 11, 12, 16 ✓



11 − 9 + 2 = 4

1 2 3 10
1 2 4 5 10
1 2 4 6 7 10
1 2 4 6 8 9 10



12 − 10 + 2 = 4

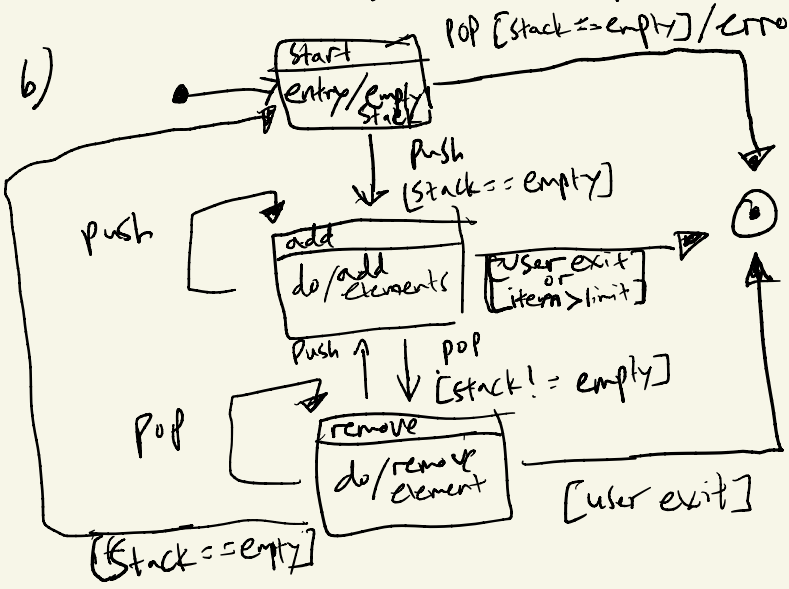
1-3, 7, 11, 14, 16

n = 1 hyperplanes
= 1

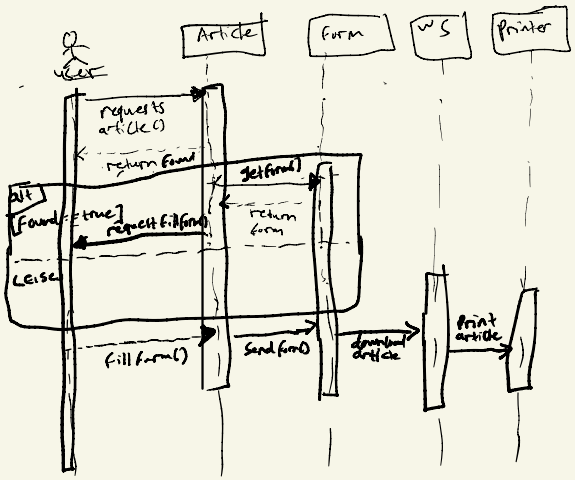
SC2002 21/22 S1

1) a) no, include is a use case scenario that is not trigger by actor but by use case when user triggering another usecase, the include usecase must happen.
Includer usecases can be reuse by other usecase who wish to trigger the same function

b)



c)



d) dependency

2) a) - focus on code rather

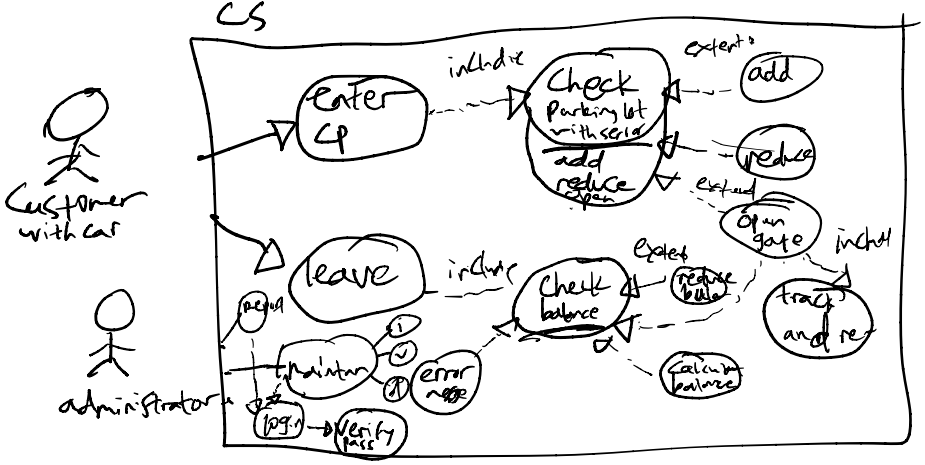
b)

c) - detailed appropriately
- emergent
- estimated
- prioritize

d) 128/8 = 16
(1+1+6) × 4K < 32K
32K × 8 = 256K

2006 sem2

1] a)



Appendix A

Carpark System (CS) Description

The Carpark System (CS) keeps track of cars entering and leaving the carpark every day and provides both customers and administrators functionalities for carpark services. The initial requirements are given below.

A carpark system administrator shall maintain (insert/update/delete) the system data including the number of parking lots available in the carpark, charging rate at different time ranges of a day, etc. after login to the system. He/she shall be able to generate reports showing the carpark usage, parking charges, and fault operations for a specific duration respectively. When a car enters the carpark, the system shall record the car ID and the time entering the carpark. When a car leaves the carpark, the system shall record the car ID and the time leaving the carpark. The system shall calculate the charges for this car and deduct the amount of money from the cash card of the car/driver. If the balance in the cash card is not enough, an error message shall display and the gate of the carpark shall keep closed. If the parking charge is deducted successfully, the gate will open and the car can leave the carpark. On each parking lot of the carpark, there is a sensor to detect whether the parking lot is occupied. The system uses the sensor data to monitor the status of a parking lot. If an empty parking lot is occupied, the vacant parking lot number shall be decreased by 1. If a parking lot becomes empty, the vacant parking lot number shall be increased by 1. The vacant parking lot number is displayed at electronic boards installed at different places of the carpark.

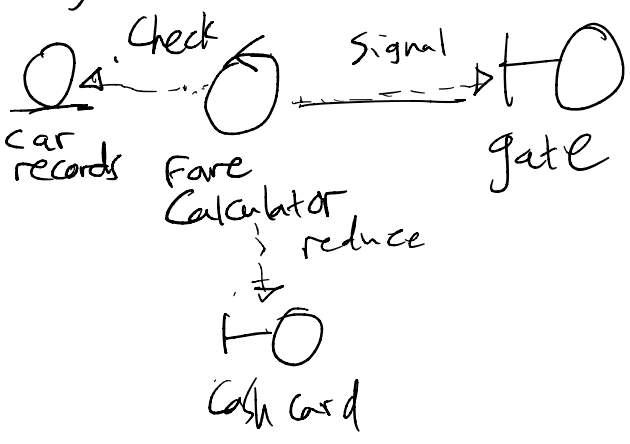
b) leaving carpark

Flow of events:

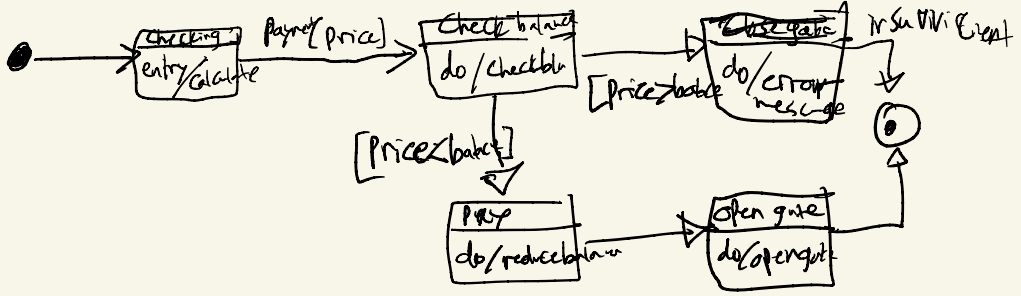
1 Car leaving
2 System calculate charges
3 System deduct
4 gate open
5 Car leaving

AF 4 not enough balance
3 error pop out

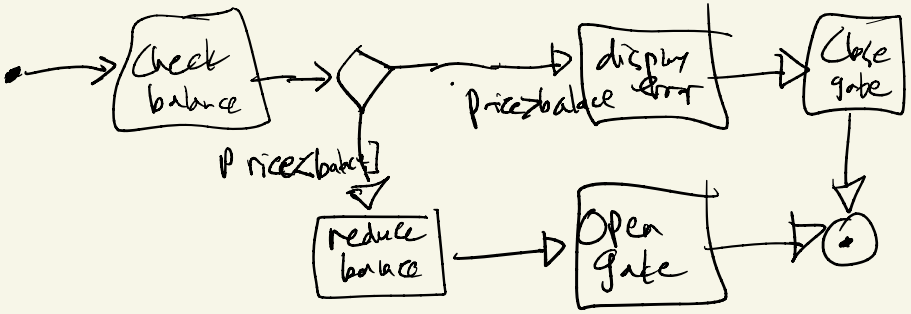
c)



2) a)

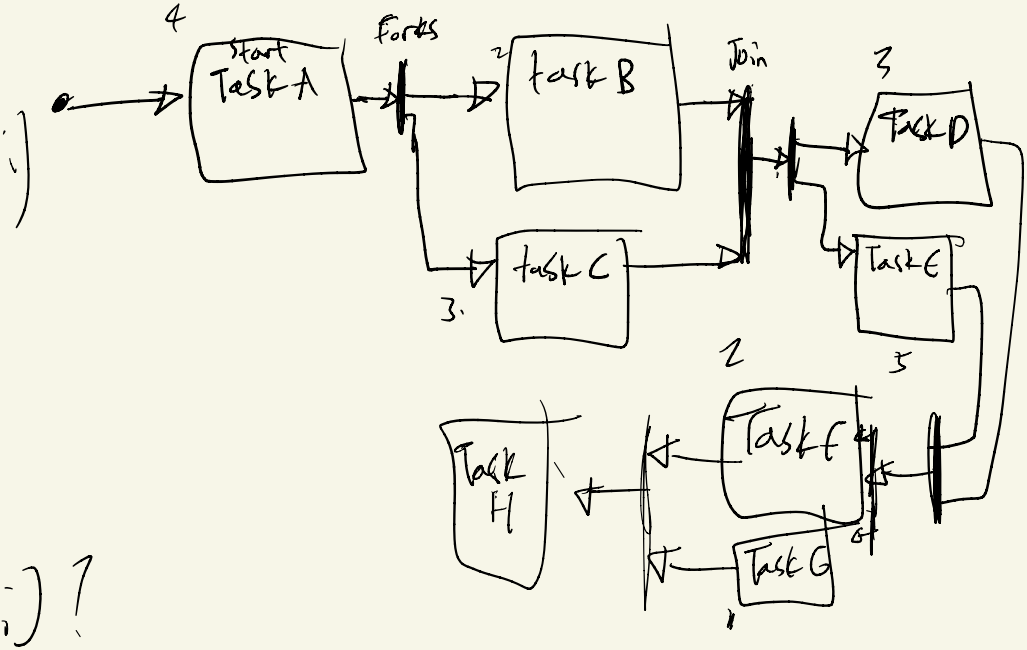


b)



c)

i)



ii) 1

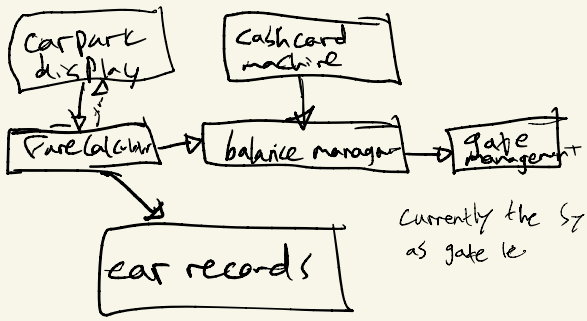
iii) 4 + 3 + 5 + 2 + 2 = 16

3) a) i)

UI

Functionality

Database



currently the system is high-coupling, as gate le

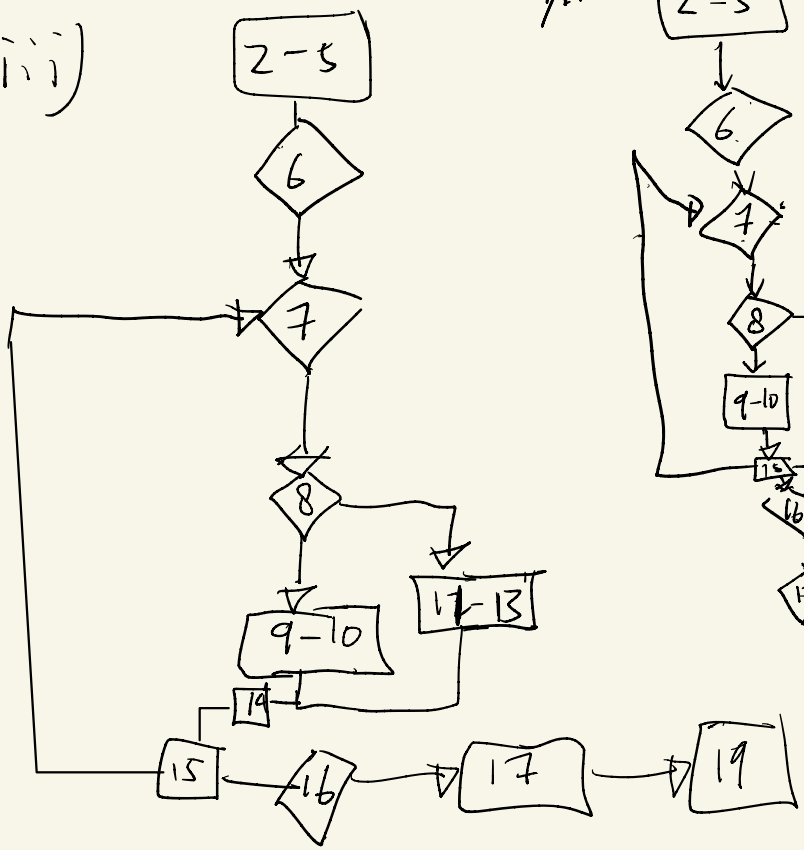
ii)

1 -10 +2

4) a) i)

equivalence Classes

iii)



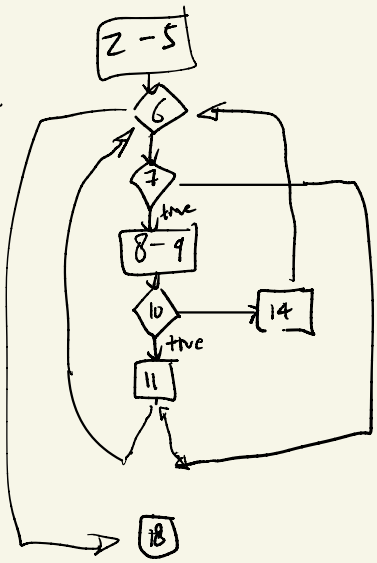
4) a) Video rare

Type of Video

Basecase

10-8+2=4

11-9+2



11-9+2=4