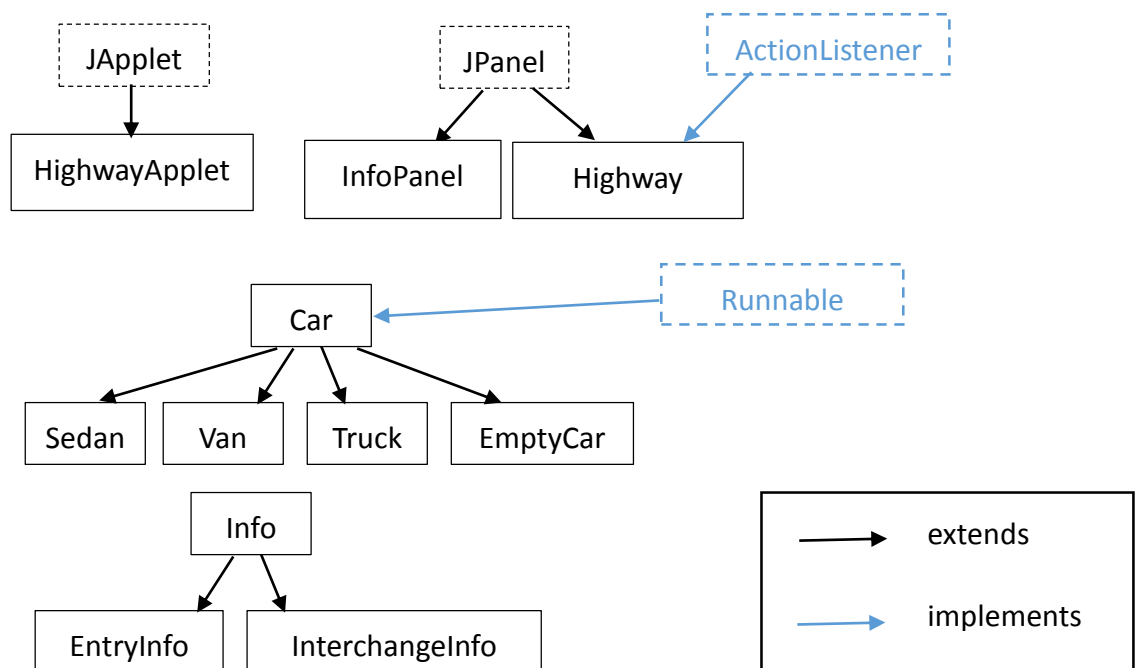


物件導向程式設計 Homework5

B99902008 資工三 李朋臻

(1) Relations between classes

There are two packages in this work, highwaysimulate and cars. Highwaysimulate is the main package that contains java applet, Highway and many important classes about controlling and GUI. Cars only contains a variety of cars. Ps. Inner class about JButton is omitted.



(2) Advantages in terms of software engineering

- Since there are two packages, classes in highwaysimulate will not mistakenly access the protected variables of classes in cars.
- It is extremely easy to add a new class that extends the class Car because all shared and complicate methods are handled in class Car.

(3) Disadvantages in terms of software engineering

- The interactions among Car, Highway, EntryInfo, and InterchangeInfo are a bit confusing. It takes time to develop a new kind of Highway.

(4) Advantages in terms of interestingness

- A variety of cars with different length and color can be simulated.
- This design obeys all the rules of task1 in homework1 and is more close to the reality because each time step every car only move once.

- c. The length, speed limit, and many attributes of highway can be set as user likes.

(5) Disadvantages in terms of interestingness

- a. Cars are too small.
- b. Accident will not be removed.

(6) Bonus

- a. The highway can have multiple lanes. Still only one entry and one interchange. Cars at the entry can choose which lane to drive but cars at the entry can only drive at lane 0.
- b. Position of interchange can be adjust by user and its correctness will be checked.
- c. Speed limit of the highway can be adjust by user.
- d. Safe factor, the ratio of minimum safe distance and speed, can be adjust by user. In homework1, this is set to 2. In fact, the minimum safe factor that can avoid chain accident is related to the max speed. For example, if max speed equals 4, the safe factor should be more than 5 to avoid chain accident.
- e. Special effect is designed for accident.