158.326 Software Architecture – Semester 2

Tutorial 2

Tutorial 2 (Part A) – use Visual Studio.Net or draw by hand on paper

Draw a component diagram on one page to indicate the following scenario for a Public Library:
The diagram should be an overview of the major components that would be needed by the library.
It should NOT show the detail of the processes carried out by the components.

Customers can check items (e.g. books/ DVDs/ magazines) via the library's Web Browser.
Customers should have valid library cards because the library only loans items to customers with valid library cards.
Some items are loaned free, but some other items (e.g., DVDs, new books) require payment.
If items are returned after a due date, then a fine of $2 is applied per day.
The payment can be via cash or EFTPOS.

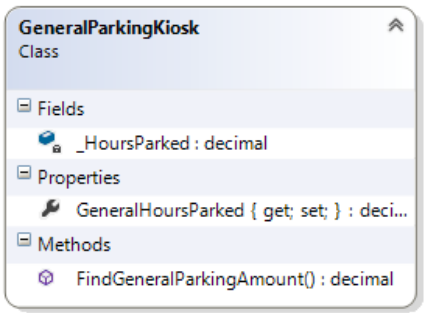
Tutorial 2 (Part B) – Create a new project based on a modification of the Tutorial 1 Parking scenario:

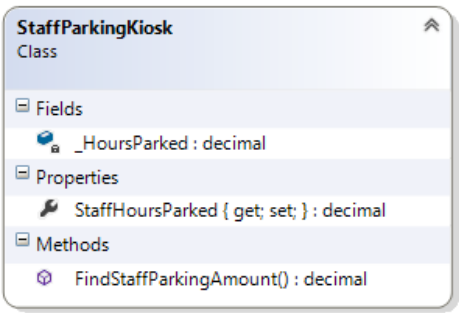
1. Define 3 classes GeneralParkingKiosk, StaffParkingKiosk and StudenParkingKiosk as follows

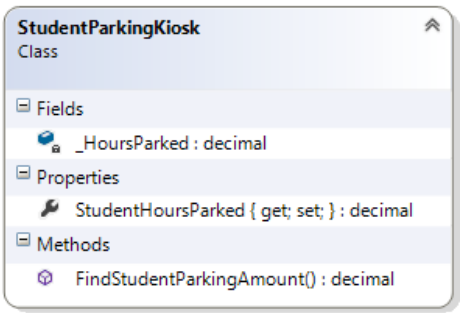
GeneralParkingKiosk -
Properties: GeneralHoursParked : Decimal
Method : FindGeneralParkingAmount( ): Decimal
Rule - $ 2 per hour

StaffParkingKiosk -
Properties: StaffHoursParked: Decimal
Method : FindStaffParkingAmount( ): Decimal
Rule –$ 2 for the first ten hours. For hours in excess of the ten, staff will be charged $ 2 per hour.

StudentParkingKiosk -
Properties: StudentHoursParked: Decimal
Method : FindStudentParkingAmount( ): Decimal
Rule - $ 1 per hour.





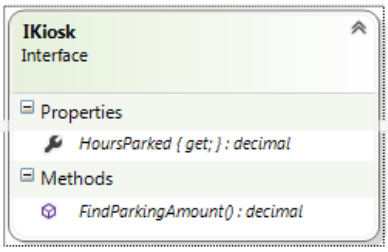


2. Add an interface IKiosk as follows:

IParking -

Properties: HoursParked: Decimal – ReadOnly

Method : FindParkingAmount( ): Decimal

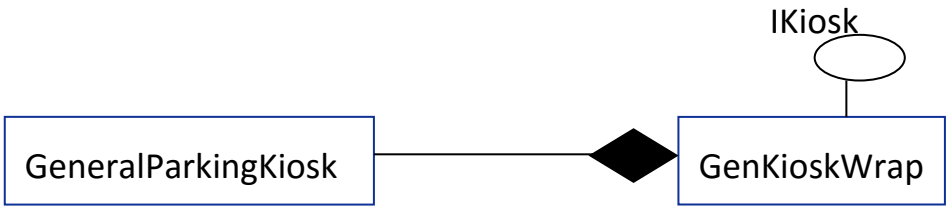


3. Define three new classes GenKioskWrap, StaffKioskWrap and StudKioskWrap as follows

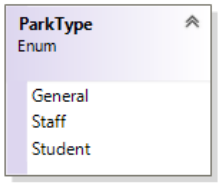
The three classes should

a. Implement IKiosk

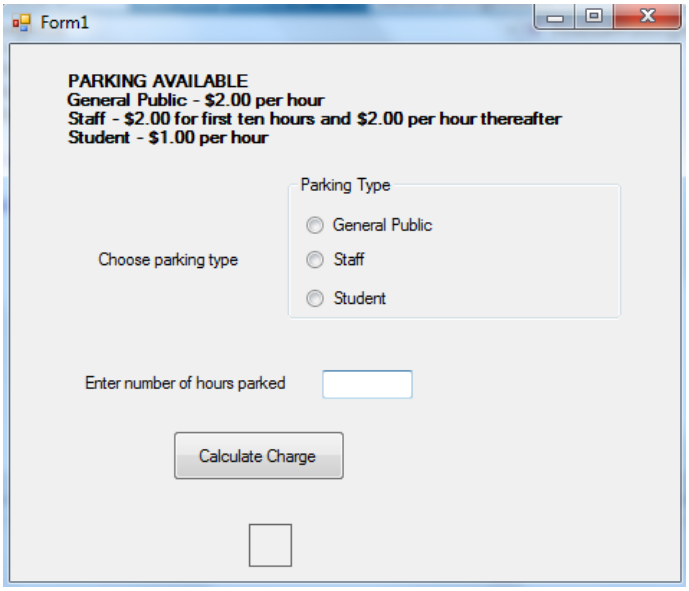
b. Encapsulate the classes defined in 1(i.e., The GenKioskWrap class encapsulates the class GeneralParkingKiosk, the StaffKioskWrap class encapsulates StaffParkingKiosk, and so on)



4. Create an Enum called ParkType



5. Form Design



NOTE: Use Math.Ceiling function to convert decimals to the next highest integer