

## Week 3:Defining simple classes

Learning Materials: Chapter 6

**[RULEs]: Member data is always private. Create necessary public functions if necessary.**

### Task 1

In mathematics, a rational number is a number such as  $-3/7$  that can be expressed as the quotient or fraction  $p/q$  of two integers, a numerator  $p$  and a non-zero denominator  $q$ .

Create a class **RationalNumber** which has two **private** data members **numerator** and **denominator** of data type **int**. **The object of this class will not store any undefined value.** Implement the following member functions (task of the function is written after a hyphen):

- **void assign(int numerator,int denominator)** - it sets the value to the data member. **Do not store if it is mathematical undefined and display error messages.**
- **double convert()** - it returns the **decimal equivalent** example:  $3/2 = 1.5$  so if numerator and denominator are 3 and 2 respectively then return 1.5.
- **void invert()** - example if the RationalNumber object stores  $3/2$  after calling this function the same object will store  $2/3$ . **Do not invert if it is mathematical undefined and display error message.**
- **void print()** - this member function will display the **RationalNumber** object. Example : if the numerator and denominator is 3 and 2 respectively then print() will display in the console -  
The Rational Number is  $3/2$

### Task 2

Create a **Medicine** class which has private data members - **name, genericName, discountPercent, unitPrice**. An object of a medicine class will have a unit price which is the maximum retail price. At any time a medicine can have a 0-45 % discount. Implement the following member functions (task of the function is written after a hyphen):

- **void assignName(char name[], char genericName[])** - this member function will initialize the name and genericName data members.
- **void assignPrice(double price)** - this member function will initialize the price. *Price needs to be non-negative. Default price is 0.*
- **void setDiscountPercent(double percent)** - this member function will initialize the discountPercent. *discountPercent needs to be within 0-45%. Default discount is 5 percent.*
- **double getSellingPrice(int nos)** - this member function returns the selling price of the medicine for given nos of unit price . Selling price = price - discount.
- **void display()** - this member function displays the information of a medicine object in the console. Example:  
**Napa (Paracetamol) has a unit price BDT 0.80. Current discount 10%.**

## Task 3

Create a class named **"Time"**. An object of **Time** class stores the value of **hour, minute and second**. All the data members need to be declared as **private**. It should be noted that **60 seconds a min, 60 mins a hour and 24 hour a day**. The hour will be reset to 0 when it is 24.

Implement the following member functions (task of the function is written after a hyphen):

- **int hours()** - return the hour value
- **int minutes()** - return the minute value
- **int seconds()** - return the second value
- **void reset(int h,int m, int s)** - reset the time to given hour min sec
- **void advance(int h,int m, int s)** - the current time will be advanced by h hour, m min and s sec.
- **void print()** - print the current time stored.