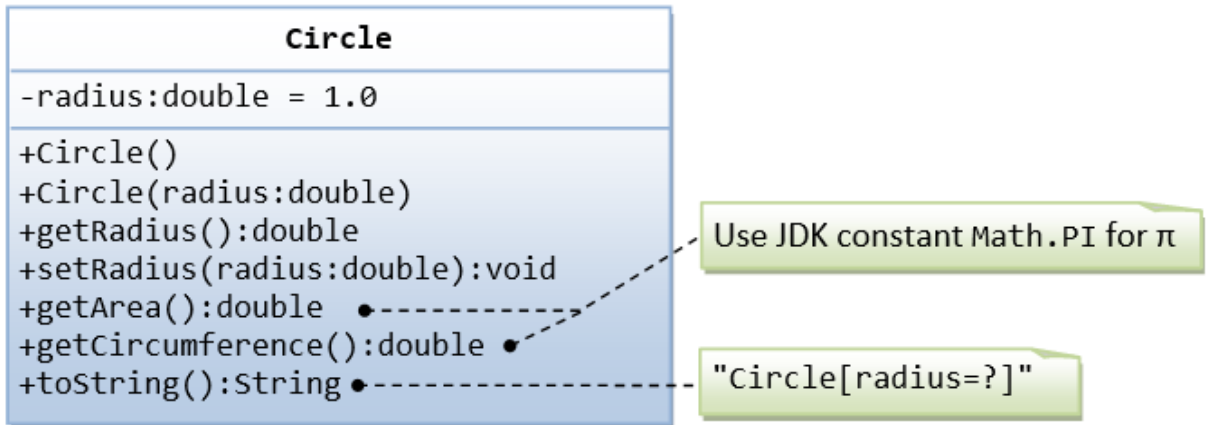


## A problem

### The Circle Class

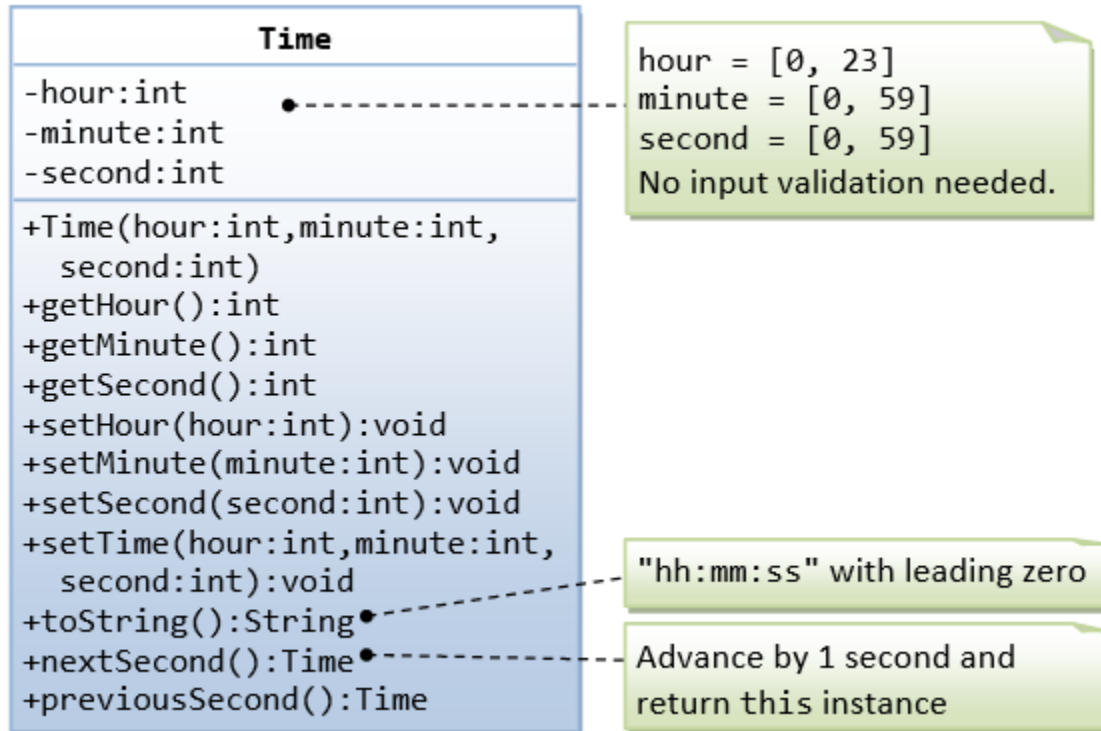
A class called `Circle`, which models a circle with a radius, is designed as shown in the following class diagram. Write the `Circle` class.



## B problem

### The Time Class

A class called `Time`, which models a time instance, is designed as shown in the following class diagram. The methods `nextSecond()` and `previousSecond()` shall advance or rewind this instance by one second, and return this instance, so as to support chaining operation such as `t1.nextSecond().nextSecond()`. Write the `Time` class.



The expected output is:

```
01:02:03
04:05:06
Hour: 4
Minute: 5
Second: 6
23:59:58
23:59:59
00:00:01
00:00:00
23:59:58
```

## C problem

### The Ball Class

A class called `Ball`, which models a bouncing ball, is designed as shown in the following class diagram. It contains its radius, `x` and `y` position. Each move-step advances the `x` and `y` by `delta-x` and `delta-y`, respectively. `delta-x` and `delta-y` could be positive or negative. The `reflectHorizontal()` and `reflectVertical()` methods could be used to bounce the ball off the walls. Write the `Ball` class. Study the test driver on how the ball bounces.

