한양대학교

OBJECT-ORIENTED SYSTEMS DESIGN (Lab4-1)

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4-1

Create classes *Bill* and *BillingDialog* defined as follows.

[*Bill*]

1. Create a defined constant *RATE* whose value is 150.00. Create **private int** instance variables *hours* and *minutes* and a **private double** instance variable *fee* .

2. Create a **public void** method *inputTimeWorked()*. It prints out

"Enter number of full hours worked" and " followed by number of minutes:" and stores the input into *hours* and *minutes*.

3. Create a **private double** method *computeFee()* that has two **int** parameters *hoursWorked* and *minutesWorked*. It returns the total fee where dollars per quarter hour is *RATE*.

4. Create a **public void** method *updateFee()* that calculates the fee by executing *computeFee()* and store it in the instance variable *fee*.

5. Create a **public void** method *outputBill ()*.

It prints out

"Time worked: "

"*hours* hours and *minutes* minutes"

"Rate: $*RATE* per quarter hour."

"Amount due: $*fee*".

4-1

[*BillingDialog*]

Write a class *BillingDialog* whose input and output are shown on the next page using the class *Bill*.

<output>

```
Welcome to the law offices of
Dewey, Cheatham, and Howe.
Enter number of full hours worked
followed by number of minutes:
3 48
Time worked:
2 hours and 48 minutes
Rate: $150.0 per quarter hour.
Amount due: $2250.0
We have placed a lien on your house.
It has been our pleasure to serve you.
```

Input

4–2

Create classes *Date* and *DateDemo1*.

[*Date*]

1. Create a **private String** instance variable *month* and **private int** instance variables *day* and *year*.
2. Create a **public String** method *toString()*. It returns "*month day, year*".
3. Create a **public void** method *writeOutput()*.

   It prints out "*month day, year*".
4. Create a **public void** method *readInput()*.

   It prints out "Enter month, day, and year." and "Do not use a comma." and it reads input and stores them into *month*, *day,* and *year*.

5. Create a **public int** method *getDay()*. It returns *day*.
6. Create a **public int** method *getYear()*. It returns *year*.
7. Create a **public int** method *getMonth()*.

   It returns the numerical representation of *month*.

   If there is no numerical representation of *month,*

   it prints out “Fatal Error”, exits, and returns 0.

8. Create a **public void** method *setDate()* that has three **int** parameters *newMonth, newDay* and *newYear*. It stores them into instance variables *month, day, and year.* Note that parameter *newMonth* is of **int** type and instance variable *month* is of **String** type. So, it should invoke *monthString* () method defined as follows.

9. Create a **public String** method *monthString(int monthNumber)*. It returns the name of *monthNumber.* If the *monthNumber* is missing or incorrect, it prints out “Fatal Error”, exits, and returns “Error”.

10. Create a **public boolean** method *equals(Date otherDate)*.

It returns true if this object is the same as *otherDate* and false otherwise.

11. Create a **public boolean** method *precedes(Date otherDate)*.

It returns true if this object precedes *otherDate* and false otherwise.

4–2

[*DateDemo1*]

Write a class *DateDemo1* whose input and output are shown on the next page using the class *Date*.

<output>

Input →

```
Enter month, day and year
Do not use a comma.
July 4 1776
July 4, 1776 does not equal August 15, 1945
August 15, 1945 does not come before July 4, 1776
```

Input →

```
Enter month, day and year
Do not use a comma.
March 29 2022
March 29, 2022 does not equal August 15, 1945
August 15, 1945 comes before March 29, 2022
```