Thought Works Homework.

Name	Guang.Yang
Education	Beijing University of Technology, Master
Email	exlsunshine@outlook.com
Mobile	13671045367
Apply	Software Development Engineer

0. How to run the program

- Before running the following command, **PLEASE MAKE SURE** that the Java environment is well installed.

  1. `cd xxx` , where `xxx` is the directory which contains the source code `FeeManager.java` .
  2. Compile the source code by running this command: `javac FeeManager.java`
  3. Run the program by this command: `java FeeManager`
  4. The program itself contains a unit test, after running the program, you will see the output coresponding to the input.

- **Unit test Input**:

  1. Input can be composed by multiple lines;
  2. Each line should be composed like YYYY-MM-DD HH:mm~HH:mm [0-9];
  3. There should be a '\n' between each line.
  4. **Sample input** should look like this:

```
2016-06-02 20:00~22:00 7
2016-06-03 09:00~12:00 14
2016-06-04 14:00~17:00 22
2016-06-05 19:00~22:00 3
2016-06-06 12:00~15:00 15
2016-06-07 15:00~17:00 12
2016-06-08 10:00~13:00 19
2016-06-09 16:00~18:00 16
2016-06-10 20:00~22:00 5
2016-06-11 13:00~15:00 11
```

- **Unit test Output**:

  1. Output is composed by one or more lines.
  2. Each line is composed in the following format: YYYY-MM-DD HH:mm~HH:mm +[0-9] -[0-9] [0-9]
  3. Finally, the total income, outcome and net income will be given at the end of the output.
  4. **Sample output** should look like this:

```
2016-06-02 20:00~22:00 +210 -240 -30
2016-06-03 09:00~12:00 +420 -180 +240
2016-06-04 14:00~17:00 +660 -600 +60
2016-06-05 19:00~22:00 +0 -0 0
2016-06-06 12:00~15:00 +450 -300 +150
2016-06-07 15:00~17:00 +360 -200 +160
2016-06-08 10:00~13:00 +570 -330 +240
2016-06-09 16:00~18:00 +480 -300 +180
2016-06-10 20:00~22:00 +150 -120 +30
2016-06-11 13:00~15:00 +330 -200 +130


Total Income: 3630
Total Payment: 2470
Profit: 1160
```

1. API Design

Function name	Description	Input	Output
getDayOfWeek	get the day of the week	String date	int
makeCharge	Calculate the charge for the given record	String record	String
calcFee	Calculate the fee from fromHour to endHour.	int dayOfWeek, int fromHour, int fromMin, int endHour, int endMin	int
GenerateSummary	Get summary for the input record	String input	String

2. Implementation of the design

```java
/**
 * Home works for Thought works.<br>
 * 2016.10.14
 * @author Guang.Yang
 */
public class FeeManager
{
    /**
     * Total income
     */
    private int income = 0;

    /**
     * Total payment
     */
    private int payment = 0;

    /**
     * get the day of the week.
     * @param date
     * @return day of the week
     */
    private int getDayOfWeek(String date);

    /**
     * Calculate the charge for the given record
     * @param record
     * @return result of charge
     */
    private String makeCharge(String record);

    /**
     *  Calculate the fee from fromHour to endHour.
     * @param dayOfWeek
     * @param fromHour
     * @param fromMin
     * @param endHour
     * @param endMin
     * @param numOfPeople
     * @return
     */
    private int calcFee(int dayOfWeek, int fromHour, int fromMin, int endHour, int
 endMin) ;

    /**
```

```
     * Get summary for the input record.
     * @param input
     * @return total income, payment and profit in String format.
     */
    public String GenerateSummary(String input);
}
```

3. Unit test code

```
public static void main(String[] args)
{
    FeeManager fManager = new FeeManager();
    String input = "2016-06-02 20:00~22:00 7"
            + "\n2016-06-03 09:00~12:00 14"
            + "\n2016-06-04 14:00~17:00 22"
            + "\n2016-06-05 19:00~22:00 3"
            + "\n2016-06-06 12:00~15:00 15"
            + "\n2016-06-07 15:00~17:00 12"
            + "\n2016-06-08 10:00~13:00 19"
            + "\n2016-06-09 16:00~18:00 16"
            + "\n2016-06-10 20:00~22:00 5"
            + "\n2016-06-11 13:00~15:00 11";

    System.out.println(fManager.GenerateSummary(input));
}
```

4. Source code

Please check it at here.
PS: **PLEASE MAKE SURE** that the `FeeManager.java` is located in the same directory with this `readMe.pdf` file, otherwise the above link will not work.