**Test Cases for CSSE4004/CSSE7014-Assignment 1**

The test cases include six predefined data files and a document which provides the test results. All the assessment items of the assignment are divided into all items of test cases and marks are also allocated for all test cases. In addition, an analysis table is given for students to analyze the results of their programs.

1. **Preparation for your test**

Copy the provided predefined data file to the folder where the class Sensors can read them. If provided file name is different to the corresponding file name which you are using, you need to do some modification and ensure all the predefined data files can be accessed correctly. Please ensure that the system environment variable path for JDK should be set up correctly before you continue the preparation.

You need to create batch file to start Sensors, HomeManager and SmartHomeUI at the almost same time. We assume that a project named **Test** is created using Eclipse and a package called **myPackage** is built in the project and all classes are developed and put in the package. We also assume that the name of the workplace folder is **myjava**. Then you can find a folder **bin** is created in the parent folder **Test** after your project is built without any errors. You can also find all executable classes are compiled and put in the folder **bin**.

Then you can create a batch file using text edit software such as Notepad++ to start a sensor automatically. For example, the temperature sensor can be started using the batch file listed below.

The name of the batch file is **TemperatureSensor.bat**

------------------------------------TemperatureSensor.bat----------------------------

**E:**

**cd\myjava\Test\bin**

**java myPackage.Sensors temperature Temperature.txt elvin://localho**st

---------------------------------- end of TemperatureSensor.bat--------------------

The other sensors can be started using other batch files listed below.

------------------------------------Clock.bat------------------------------------------

**E:**

**cd\myjava\Test\bin**

**java myPackage.Sensors clock Clock.txt elvin://localho**st

---------------------------------- end of Clock.bat-----------------------------------

-----------------------------------User1LocationSensor.bat------------------------

**E:**

**cd\myjava\Test\bin**

**java myPackage.Sensors location User1Location.txt elvin://localho**st

----------------------------------end of User1LocationSensor.bat------------------

------------------------------------User2LocationSensor.bat------------------------

**E:**

**cd\myjava\Test\bin**

**java myPackage.Sensors location User2Location.txt elvin://localho**st

----------------------------------end of User2LocationSensor.bat------------------

------------------------------------User1BPSensor.bat-------------------------------

**E:**

**cd\myjava\Test\bin**

**java myPackage.Sensors BP User1bp.txt elvin://localho**st

----------------------------------end of User1BPSensor.bat-------------------------

------------------------------------User2LocationSensor.bat------------------------

**E:**

**cd\myjava\Test\bin**

**java myPackage.Sensors BP User2bp.txt elvin://localho**st

----------------------------------end of User2LocationSensor.bat-----------------

You also need create batch files to start HomeManager and SmartHomeUI

------------------------------------HM.bat--------------------------------------------

**E:**

**cd\myjava\Test\bin**

**java myPackage.HomeManager elvin://localho**st

----------------------------------end of HM.bat--------------------------------------

------------------------------------UI.bat----------------------------------------------

**E:**

**cd\myjava\Test\bin**

**java myPackage.SmartHomeUI elvin://localho**st

----------------------------------end of UI.bat----------------------------------------

At last you need to create another batch file to start all the eight batch files in a correct sequence at almost the same time. We can assume the batch name of the batch file is TestStart.bat

----------------------------------------start.bat----------------------------------------

start Clock

start TemperatureSensor

start User1LocationSensor

start User2LocationSensor

start User1BPSensor

start User2BPSensor

start HM

start UI

-----------------------------------end of start.bat------------------------------

You can save all the batch files in your workplace folder.

1. **How to test your program**

**Step 1**:

If you complete all the work in the stage of test preparation, you can start your test by double clicking the batch file **TestStart.bat** in window system. You will find that eight command windows are opened at almost the same time if you have created all your batch files correctly. Please check your package name or predefined file name if any error occurred.

Then you need to go to the command window where UI is running, and check if some heath warnings are displayed. If no any health warning is displayed in the screen, you can think the reasons for the errors according to the probability listed below.

* Please check if the predefined file names can match the names which you are using in the class Sensors
* Please check if you correctly set the conditions to send health warning in the class HomeManager.
* Please check all command in your batch files, especially to ensure the parameters for the commands in **User1BPSensor.bat** and **User2BPSensor.bat** both are correct.
* Please check if the commands in **TestStart.bat** are correct.
* Please debug your source codes, and you can use the provided predefined files in this test case for your debugging.

If you find some health warnings are rendered on the UI screen, you can go to the Table 1 to check if your warnings are correct or press any key and return to the Main Menu for other test operation. You can compare the result of your program with the expected results of test case using Table 1.

**Step 2**:

Go to the command window of UI and enter **User2**. You need to input the corresponding user name of your program and select option **2** of the Main Menu. Then enter **Tuesday** for start day and **Friday** for end day. Then execute the UI and it can render the health warning log data which are returned by HM. You can compare your result with the test expected results in Table 1.

**Step 3:**

Following the step 2, select option **1** in the Main Menu of UI. Then the log data about temperature can be displayed. You can compare your result with the test expected results in Table 1.

**Step 4:**

Following the step 3, select option E. Then you can find UI exits. All sensors exit and whole application is closed. You can compare your result with the test expected results in Table 1.

**Table 1. The form for test cases**

|  |  |  |
| --- | --- | --- |
| **Operation** | **Expected results** | **Assessment items and marks allocated** |
| Execute TestStart.bat | 1．Six command windows for each sensors open.  2． The health warnings are automatically displayed in the UI window while programs are running.  **Tuesday**: Health Warning!  **User2**, your current heart rate and systolic blood pressure are **110** bpm and **130** mmHg, respectively.  Please relax and consider taking your medication.  **Wednesday**: Health Warning!  **User2**, your current heart rate and systolic blood pressure are **120** bpm and **150** mmHg, respectively.  Please relax and consider taking your medication.  **Thursday**: Health Warning!  **User1**, your current heart rate and systolic blood pressure are **120** bpm and **145** mmHg, respectively.  Please relax and consider taking your medication.  **Friday**: Health Warning!  **User2**, your current heart rate and systolic blood pressure are **95** bpm and **155** mmHg, respectively.  Please relax and consider taking your medication.  **Saturday**: Health Warning!  **User2**, your current heart rate and systolic blood pressure are **115** bpm and **135** mmHg, respectively.  Please relax and consider taking your medication.  **Sunday**: Health Warning!  **User1**, your current heart rate and systolic blood pressure are **110** bpm and **160** mmHg, respectively.  Please relax and consider taking your medication. | * All six sensors are running   ***[mark:2]***   * Data in warnings are correct.   ***[mark:1]***   * Warnings periodically displayed.   ***[mark:1]***   * Warnings are issued to correct user (data in warning is also correct, the user name corresponds to the user name in your program.)   ***[mark:2]***   * The program can return to the Main Menu following the warnings   ***[mark:1]*** |
| Select Option **2** of the Main Menu of UI | Health Information of Warnings issued between **Tuesday** and **Friday** for **User2**:  The recorded heart rate and systolic blood pressure on **Tuesday** were: 110bpm 130mmHg.  The recorded heart rate and systolic blood pressure on **Wednesday** were: 120bpm 150mmHg,.  The recorded heart rate and systolic blood pressure on **Friday** were: 95bpm 155mmHg. | * UI can display the data from HM (RPCs are correctly implemented )   ***[mark:2]***   * The recorders are correct, including correct day, Data and User.   ***[mark:1.5]***   * The recorders correctly are in the period between the start day and end day.   ***[mark:1]*** |
| Select Option **1** of the Main Menu of UI | **Tuesday**: Air-conditioning adjusted.  Temperature: at **25** degrees  At Home: **User1 and User2**  **Wednesday**: Air-conditioning adjusted.  Temperature: at **28** degrees  At Home: **User2**  **Friday**: Air-conditioning adjusted.  Temperature: at **29** degrees  At Home:  **Friday**: Air-conditioning adjusted.  Temperature: at **25** degrees  At Home: **User1**  **Saturday**: Air-conditioning adjusted.  Temperature: at **30** degrees  At Home:  **Sunday**: Air-conditioning adjusted.  Temperature: at **29** degrees  At Home: | * UI can display the data from HM (RPCs are correctly implemented ) .This item is assessed both in both option 1 an 2 of UI. Mark is added only one time.   ***[mark:2]***   * The recorders of the temperature adjustment log data are correct.   ***[mark:1.5]***   * More than one recorder are created on Friday at temperature 25 and User1 is home. Check if the temperate sensor is sending data in periodic mode.   ***[mark:1]***   * Two recorders are created on Saturday and no occupants are home. Check if the temperature sensor can send data in non periodic mode.   ***[mark:1]*** |
| Select Option **E** of the Main Menu of UI | UI can exit.  All sensors can exit.  HM can close. | * UI can exit.   ***[mark:1]***   * All sensors can exit.   ***[mark:1]***  HM can shutdown.  ***[mark:1]*** |
| Confirm Pseudo-RPC is implemented for communication between HM and UI | The corresponding Source codes may be read for the assessment. | * Implementation of   Method for remote process call in UI,  HomeManagerPseudoRPCClientStub.java， HomeManagerPseudoRPCServerStub.java，  Method for response to client request in HM  ***[mark:2]*** |
| Check your source codes | The codes is commented  The layout of your codes are neat | * Codes are commented   ***[mark:1]***   * The layout of your codes are neat.   ***[mark:1]*** |

1. **Analyzing the results of your program**

The Table 2 is given to analyze the results of your program. All the predefined data files is produced from the table. The matrix of clock seconds and readings of all sensors can help you to predict the result of your program. This is just for a reference

**Table 2. The matrix of time and sensor readings**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Seconds**  **Input/output** | 10 | 15 | 5 | 10 | 15 | 15 | 15 | 10 | 20 | 600 |
| Clock | Tuesday | Tuesday | Wednesday | Wednesday | Thursday | Friday | Friday | Saturday | Sunday | Sunday |
| **Seconds**  **Input/output** | 11 | 5 | 15 | 5 | 15 | 20 | 15 | 10 | 20 | 600 |
| Temperature | 22 | 25 | 22 | 28 | 25 | 29 | 25 | 30 | 29 | 22 |
| **Seconds**  **Input/output** | 10 | 15 | 5 | 15 | 10 | 15 | 15 | 10 | 20 | 600 |
| User1Tracker | Home | Home | Away | Away | Away | Away | Home | Away | away | home |
| **Seconds**  **Input/output** | 10 | 10 | 10 | 15 | 10 | 15 | 10 | 10 | 25 | 600 |
| User2Tracker | Home | Home | Home | Home | Away | Away | Away | Away | away | home |
| **Seconds**  **Input/output** | 10 | 15 | 5 | 15 | 5 | 20 | 10 | 25 | 10 | 600 |
| User1BP | 90\_120 | 95\_130 | 90\_120 | 95\_125 | 120\_145 | 90\_100 | 95\_130 | 95\_120 | 110\_160 | 80\_100 |
| **Seconds**  **Input/output** | 11 | 5 | 15 | 5 | 20 | 15 | 15 | 5 | 25 | 600 |
| User2BP | 90\_120 | 110\_130 | 90\_125 | 120\_150 | 100\_120 | 95\_155 | 80\_105 | 115\_135 | 80\_120 | 90\_110 |
| HM temperature adjustment log data |  | TemperatureLog recorder |  | Temperature  Log recorder | No temperature log recorder | Only one log recorder | Temperature log recorder | One log recorder | One log recorder |  |
| HM health warning log data |  | Warnings  Log recorder |  |  | Warnings  Log recorder | Warnings  log |  | Warnings  Log recorder | Warning  Log recorder |  |
| UI Health Warnings |  | Health warnings |  |  | Health warnings | Health warnings |  | Health warnings | Health warnings |  |