

PROJECT SPECIFICATION

Problem Selection

Creation of a Human

Problem Description

- Use the information on the following slides to model a human and selected organs.
- Create properties and methods to appropriately model the state of and interact behavior of human objects.
- Add your own unique flair by taking a creative approach to interacting with the objects in this project.

Member Designation

We approve the project as described above, and authorize the team to proceed.

Member Name	Member Role	Date / Initial
Darah Backal	Algorithm Designer	DB 10/19/20
Ozzie Rodriguez	Programmer	OR 10/19/20
Mouaz Ali	Tester	MA 10/19/20

High-Level Requirements

Members must work in their specific roles in a timely fashion.

- The algorithm designer solves the problem and creates the design documentation used by the programmer and tester
- The programmer writes commented Java source code after interpreting the documentation provided by the designer
- The tester creates and implements test cases and works with the designer and programmer to alleviate errors
- The tester is also responsible for producing the final report, including the original design documents, source code, and test case results

Deliverables

Use this report as a guide for what to include in your project submission. The following items must be included.

- Design documentation (digital white-board, algorithm pseudo-code, program flowchart)
- Java Source Code (fully commented using JavaDoc, implements the design specification)
- Test Cases (establish test cases and document the results, any code or design issues should be documented and resolved)

Algorithm Designer Documentation Checklist

•	The whiteboard should feature a conceptual overview of how the problem is solved. PowerPoint may be used as the whiteboard medium, however there are a host of possible ways to submit design documentation (see the professor for details).	6 Points
•	Flowchart featuring program flow and decision trees. Use PowerPoint to generate these diagrams unless you're familiar with a UML modeler that you prefer to use.	6 Points
•	Create plain language instructions (pseudo—code) for use by the programmer and quality assurance analyst during the implementation and testing phases.	6 Points
•	Identify input / output requirements. These should be shown on the flowchart.	2 Points

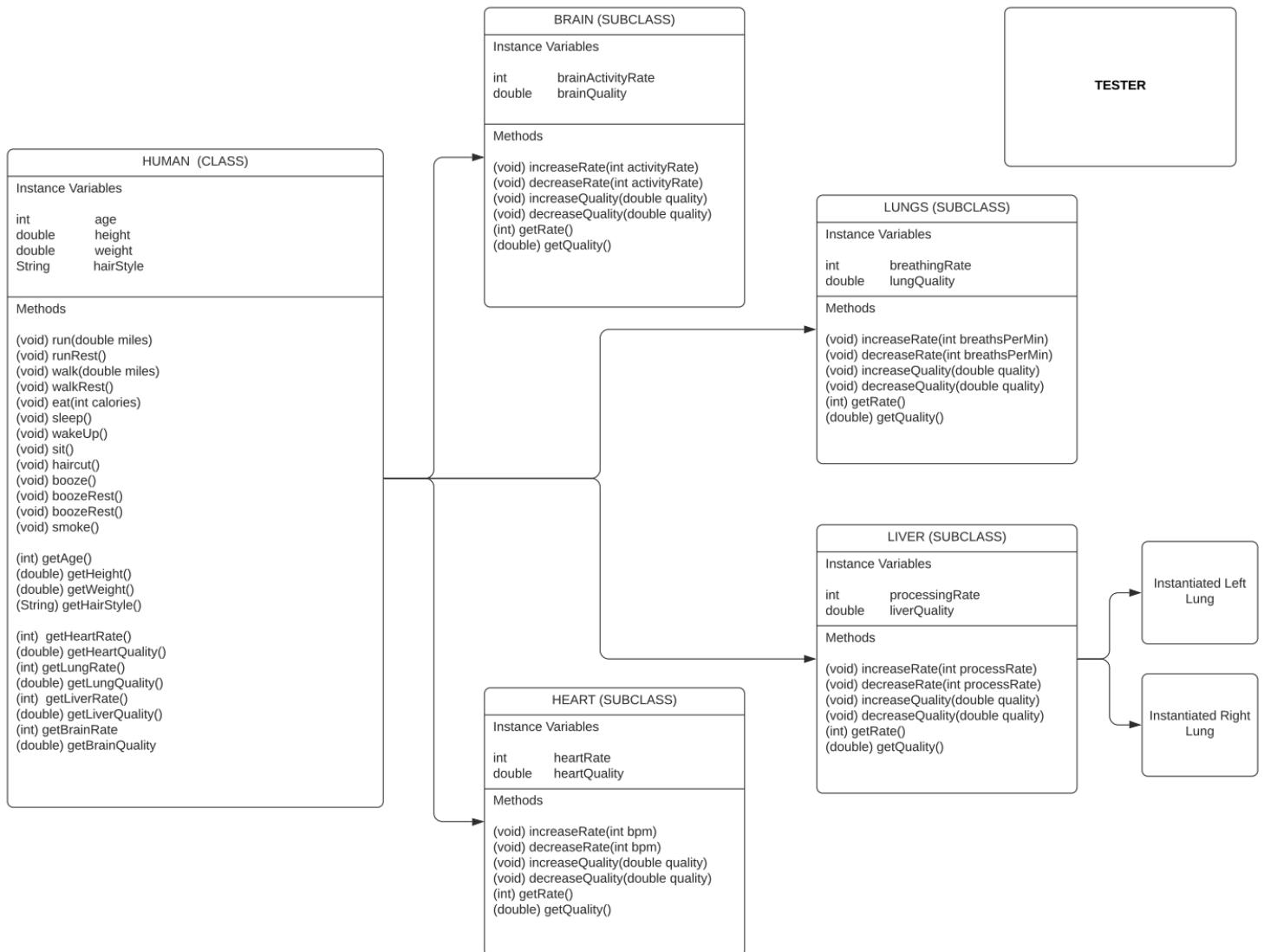
Programmer Task Checklist

•	Uses the documentation provided by the designer to implement Java Source Code to solve the problem.	10 Points
•	Uses resources such as pre-existing classes in the Java API to aide in development.	2 Points
•	Uses JavaDoc format to comment all classes, methods, and variables.	6 Points
•	Exports the project with eclipse for use by the quality assurance tester.	2 Points

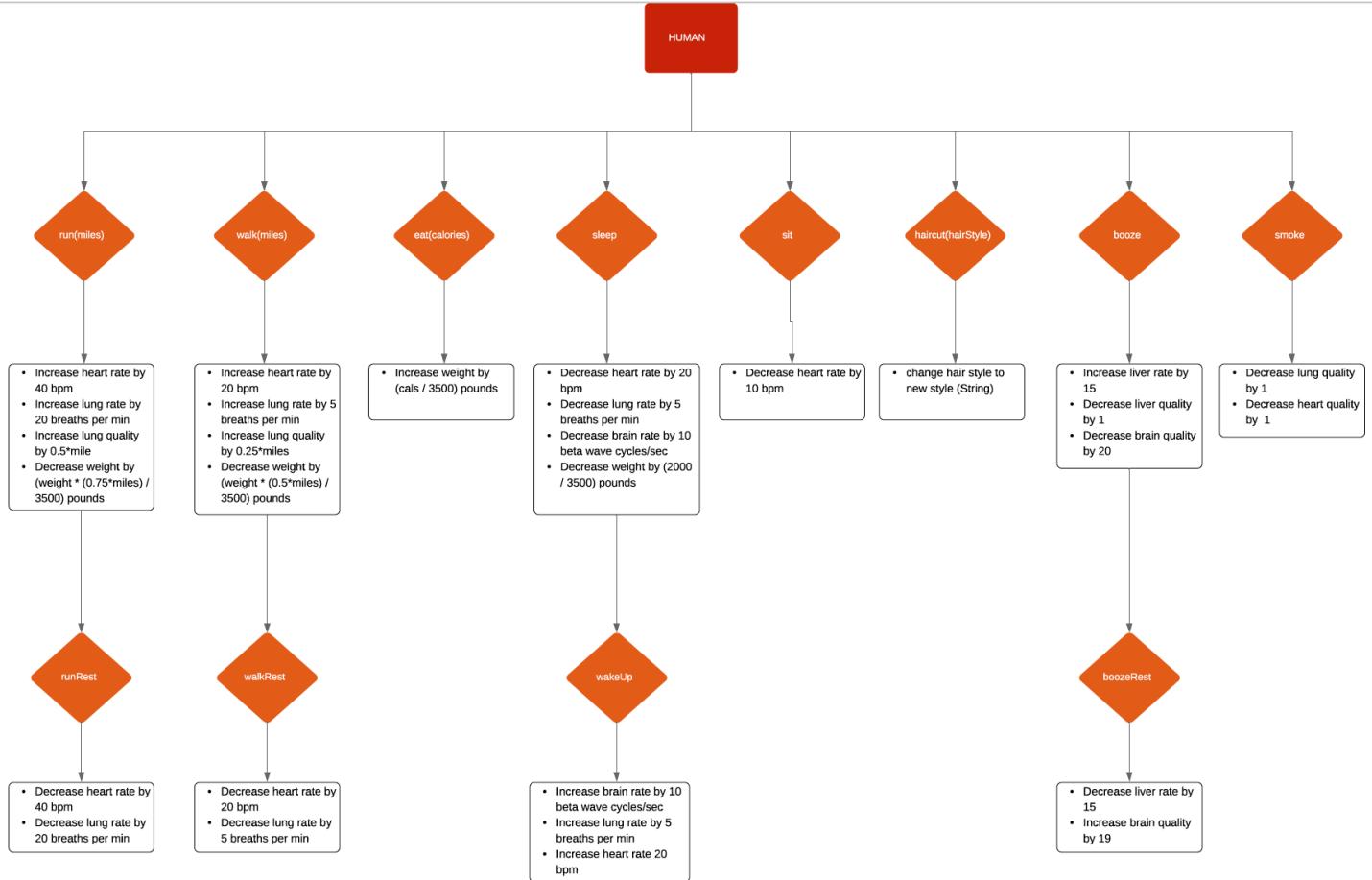
Quality Assurance Tester Task Checklist

•	Uses resources such as the designer's flowchart and the plain language document to understand how the algorithm works.	4 Points
•	Analyzes the classes provided by the programmer and compares them to the designer's documentation. If any discrepancies are discovered, they should be documented and resolved with the programmer and designer.	8 Points
•	Create test cases based on the application implementation. Provide the results of the test cases as part of the final report.	5 Points
•	Create the final report including the original documentation, the source code, and the quality assurance results observed.	3 Points

White Board:



Flow Chart:



Pseudocode:

INSTANTIATING A HUMAN CLASS

To instantiate a human

- Parameters:
 - Age: int
 - Height: double
 - Weight: double
 - hairStyle: String
- Instantiated organs(subclasses) required:
 - ****assume “qualities” for organs are 100 for very good
 - Heart:
 - heartRate = 80
 - heartQuality = 100
 - Brain:
 - brainActivityRate = 30
 - brainQuality = 100
 - Lungs:
 - breathingRate = 15
 - lungQuality = 100
 - Must instantiate left and right lung
 - lungRate stays equivalent for both
 - lungQuality: left quality should remain 10 less than right → left lung is smaller
 - Note: mutators will equally alter each lung
 - Liver:
 - processingRate = ?
 - liverQuality = 100

HUMAN METHODS

ACCESSORS

getAge → returns age, int

getHeight → returns height, double

getWeight → returns weight, double

getHairStyle → returns hair style, String

getHeartRate → returns heart rate, int

getHeartQuality → returns heart quality, double

getBrainRate → returns brain activity rate, int

getBrainQuality → returns brain quality, double

getLiverRate → returns liver processing rate, int

getLiverQuality → returns liver quality, double

getLungRate → returns lung breathing rate for L and R, int

getLungQuality → returns lung rate for L and R, double

MUTATORS

run → parameter: miles (double)

- run will mutate the following:

- Increase heart rate by 40 bpm
- Increase breathing rate by 20 breaths per min
- Increase lung quality by (0.5*mile)
- Decrease weight by $(\text{weight} * (0.75*\text{miles}) / 3500) \rightarrow$ calculation of calories burned by distance & weight / calories in a pound

runRest

- runRest will mutate the following to bring heart & lung rate back to rest (only post run method):

- Decrease heart rate by 40 bpm
- Decrease breathing rate by 20 breaths per min

walk → parameter: miles (double)

- walk will mutate the following:

- Increase heart rate by 20 bpm
- Increase breathing rate by 5 breaths per min
- Increase lung quality by (0.25*mile)
- Decrease weight by $(\text{weight} * (0.5*\text{miles}) / 3500) \rightarrow$ calculation of calories burned by distance & weight / calories in a pound

walkRest

- walkRest will mutate the following to bring heart & lung rate back to rest (only post walk method):

- Decrease heart rate by 20 bpm
- Decrease breathing rate by 5 breaths per min

eat → parameter: calories (int)

- eat will mutate the following:

- Increase weight by (calories / 3500(lb))

sleep

- sleep will mutate the following:

- Decrease heart rate by 20
- Decrease breathing rate by 5
- Decrease brain activity rate by 10 beta wave cycles/sec
- Decrease weight (2000 / 3500) → 2000 avg calories burned in a day/ 3500 calories per pound

wakeUp

- wakeUp will mutate the following to bring brain, lung and heart rate back to levels while awake:

- Increase brain activity rate by 10 beta wave cycles/sec
- Increase breathing rate by 5 breaths per min
- Increase heart rate by 20 bpm

sit

- sit will mutate the following:

- Decrease heart rate 10 bpm

haircut → parameter: newStyle (String)

- Will alter current hairstyle to new parameter/string given

booze

- booze will mutate the following:

- Increase liver processing rate by 15
- Decrease liver quality by 1
- Decrease brain quality by 20

boozeRest

- Will mutate the following to bring levels back to pre-booze, liver quality will remain diminished:
 - Decrease liver processing rate by 15
 - Increase brain quality by 19

smoke

- smoke will mutate the following:
 - Decrease lung quality by 1
 - Decrease heart quality by 2

ORGAN METHODS

HEART

getRate → returns heart's rate, int

getQuality → returns heart's quality, double

BRAIN

getRate → returns brain's activity rate, int

getQuality → returns brain's quality, double

LUNGS

getRate → returns lungs' breathing rate, int

- Return for L & R

getQuality → returns lungs' quality, double

- Return for L & R

LIVER

getRate → returns liver's processing rate, int

getQuality → returns liver's quality, double

ALL ORGAN ACCESSOR

checkVitals → returns heart rate/quality, brain rate/quality, liver rate/quality, lung rate/quality

Zoom in 300% + to properly read, Didn't know how you wanted it structured.

Human Class

```

Human.java  Brain.java  Heart.java  LeftLung.java  RightLung.java  Liver.java  Tester.java
1  /*
2   * Human objects with basic measurements and organs that can engage in activities
3   * altering many measurements and organ attributes
4   */
5
6  public class Human {
7
8      //INSTANCE VARIABLES
9      private int age;
10     double height;
11     double weight;
12     String hairstyle;
13
14     private Brain brain;
15     private RightLung rightlung;
16     private LeftLung leftlung;
17     private Liver liver;
18
19
20     public Human(String name, int age, double height, double weight, String hairstyle){
21         this.name = name;
22         this.age = age;
23         this.height = height;
24         this.weight = weight;
25         this.hairstyle = hairstyle;
26         brain = new Brain();
27         rightlung = new RightLung();
28         leftlung = new LeftLung();
29         liver = new Liver();
30     }
31
32
33     // METHODS
34
35     // INSTEAD OF INCREASE/DECREASE WEIGHT
36     /**
37      * @param weight weight in pounds as floating number
38      */
39     public void setweight(double weight) {
40         this.weight = weight;
41
42         /* makes human object eat
43          * increases heart rate, breathing rate, lung quality
44          * decreases weight
45          * @param calories burned per miles based on weight, converted into pounds
46          * @param miles floating point representation of distance can in miles
47
48         public void run(double miles) {
49             heart.setRate(heart.getRate() + 40);
50             rightlung.setQuality(rightlung.getQuality() + 20);
51             leftlung.setQuality(leftlung.getQuality() + 0.5*miles);
52             liver.setRate(liver.getRate() + 0.5*miles);
53             this.setweight(this.getweight() - (this.weight*miles*.75)/3500);
54         }
55
56         /* makes human rest from run activity,
57          * brings heart rate and breathing rate back to resting levels
58
59         public void runrest() {
60             heart.setRate(heart.getRate() - 40);
61             rightlung.setRate(rightlung.getRate() - 20);
62             leftlung.setRate(leftlung.getRate() - 20);
63         }
64
65
66         /* makes human do some walk
67         * decreases heart rate, breathing rate, lung quality
68         * @param miles floating point representation of distance walked in miles
69
70         public void walk(double miles) {
71             heart.setRate(heart.getRate() - 2);
72             rightlung.setQuality(rightlung.getQuality() + 0.25*miles);
73             leftlung.setRate(leftlung.getRate() + 5);
74             liver.setRate(liver.getRate() + 0.25*miles);
75             this.setweight(this.getweight() - (this.weight*miles*.5)/3500);
76         }
77
78         /* makes human rest from walk activity
79         * brings heart rate and breathing rate back to resting levels
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Human.java  Brain.java  Heart.java  LeftLung.java  RightLung.java  Liver.java  Tester.java
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Human.java  Brain.java  Heart.java  LeftLung.java  RightLung.java  Liver.java  Tester.java
198 //HEART GETTERS
199 /**
200  * @return integer representing heart rate (BPM)
201  */
202 public int getheartRate() {
203     return heart.getRate();
204
205     //LUNG GETTERS
206
207     /**
208      * @return breaths per minute
209      */
210     public int getrightlungRate() {
211         return rightlung.getRate();
212
213     /**
214      * @return lungs quality
215      */
216     public double getrightlungQuality() {
217         return rightlung.getQuality();
218
219     //LIVER GETTERS
220
221     /**
222      * @return liver processing rate
223      */
224     public int getliverRate() {
225         return liver.getRate();
226
227     /**
228      * @return liver quality
229      */
230     public double getliverQuality() {
231         return liver.getQuality();
232
233     //BRAIN GETTERS
234
235     /**
236      * @return brain activity rate
237      */
238     public int getbrainActivityRate() {
239         return brain.getRate();
240
241     /**
242      * @return brain quality
243      */
244     public double getbrainQuality() {
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```

Brain Class:

```
Human.java Brain.java Heart.java LeftLung.java RightLung.java Liver.java Tester.java
1 |
2② /** Heart subclass of Human class that have attributes
3 * altered by human activities
4 */
5 public class Brain {
6
7 //INSTANCE VARIABLES
8     private int brainActivityRate;
9     private double brainQuality;
10
11③     public Brain() {
12         brainActivityRate = 30; // avg beta wave cycles/second
13         brainQuality = 100;
14     }
15
16 //MUTATORS
17④     /** sets brain activity rate
18      * @param rate Integer representing rate of brain activity (beta wave cycles/second)
19      */
20⑤     public void setRate(int rate) {
21         this.brainActivityRate = rate;
22     }
23
24⑥     /** sets brain quality
25      * @param Quality Double representation of brain quality (in percent)
26      */
27⑦     public void setQuality(double Quality) {
28         this.brainQuality = Quality;
29     }
30
31 //ACCESSORS
32⑧     /** returns brain activity rate
33      * @return brainActivityRate Integer representing rate of brain activity (beta wave cycles/second)
34      */
35⑨     public int getRate() {
36         return brainActivityRate;
37     }
38
39⑩     /** returns brain quality
40      * @return brainQuality Double representation of liver quality (in percent)
41      */
42⑪     public double getQuality() {
43         return brainQuality;
44     }
45 }
46 }
```

Heart Class:

```
Human.java Brain.java Heart.java LeftLung.java RightLung.java Liver.java Tester.java
1 |
2② /** Heart subclass of Human class that have attributes
3 * altered by human activities
4 */
5 public class Heart {
6
7 //INSTANCE VARIABLES
8     private int heartRate;
9     private double heartQuality;
10
11③     public Heart() {
12         heartRate = 80;
13         heartQuality = 100;
14     }
15
16 //MUTATORS
17④     /** returns heart rate
18      * @param rate Integer representing heart rate (BPM)
19      */
20⑤     public void setRate(int rate) {
21         this.heartRate = rate;
22     }
23
24⑥     /** returns heart quality
25      * @param quality Double representation of heart quality (in percent)
26      */
27⑦     public void setQuality(double quality) {
28         this.heartQuality = quality;
29     }
30
31 //ACCESSORS
32⑧     /** returns heart rate
33      * @return heartRate Integer representing heart rate (BPM)
34      */
35⑨     public int getRate() {
36         return heartRate;
37     }
38
39⑩     /** returns heart quality
40      * @return heartQuality Double representation of heart quality (in percent)
41      */
42⑪     public double getQuality() {
43         return heartQuality;
44     }
45 }
46
47 }
48 }
```

Left & Right Lung Classes:

```
Human.java Brain.java Heart.java LeftLung.java RightLung.java Liver.java Tester.java
```

```
1/* Lungs subclass of Human class that have attributes
2 * altered by human activities
3 */
4 public class Leftlung {
5
6 //INSTANCE VARIABLES
7 private int breathingRate;
8 private double lungQuality;
9
10 public Leftlung() { //left lung needs to have lower quality
11     breathingRate = 15; //avg breaths per min
12     lungQuality = 85;
13 }
14
15 //MUTATORS
16 /** sets lungs rate
17 * @param rate Integer representing breaths per minute
18 */
19 public void setRate(int rate) {
20     this.breathingRate = rate;
21 }
22
23 /** sets lungs quality
24 * @param quality Double representation of lungs quality (in percent)
25 */
26 public void setQuality(double quality) {
27     this.lungQuality = quality;
28 }
29
30 //ACCESSORS
31 /** returns lungs rate
32 * @return breathingRate Integer representing breaths per minute
33 */
34 public int getRate() {
35     return breathingRate;
36 }
37
38 /** returns lungs quality
39 * @return lungQuality Double representation of lungs quality (in percent)
40 */
41 public double getQuality() {
42     return lungQuality;
43 }
44
45 }
46 }
```

```
Human.java Brain.java Heart.java LeftLung.java RightLung.java Liver.java Tester.java
```

```
1/* Lungs subclass of Human class that have attributes
2 * altered by human activities
3 */
4 public class Rightlung {
5
6 //INSTANCE VARIABLES
7 private int breathingRate;
8 private double lungQuality;
9
10 public Rightlung() { //left lung needs to have lower quality
11     breathingRate = 15; //avg breaths per min
12     lungQuality = 100;
13 }
14
15 //MUTATORS
16 /** sets lungs rate
17 * @param rate Integer representing breaths per minute
18 */
19 public void setRate(int rate) {
20     this.breathingRate = rate;
21 }
22
23 /** sets lungs quality
24 * @param quality Double representation of lungs quality (in percent)
25 */
26 public void setQuality(double quality) {
27     this.lungQuality = quality;
28 }
29
30 //ACCESSORS
31 /** returns lungs rate
32 * @return breathingRate Integer representing breaths per minute
33 */
34 public int getRate() {
35     return breathingRate;
36 }
37
38 /** returns lungs quality
39 * @return lungQuality Double representation of lungs quality (in percent)
40 */
41 public double getQuality() {
42     return lungQuality;
43 }
44
45 }
46 }
```

Liver Class:

```
Human.java Brain.java Heart.java LeftLung.java RightLung.java Liver.java Tester.java
```

```
1
2/* Liver subclass of Human class that have attributes
3 * altered by human activities
4 */
5 public class Liver {
6
7 //INSTANCE VARIABLES
8 private int processingRate;
9 private double liverQuality;
10
11 public Liver() {
12     processingRate = 80;
13     liverQuality = 100;
14 }
15
16 //MUTATORS
17 /** sets liver processing rate
18 * @param rate Integer representing rate of liver processing
19 */
20 public void setRate(int rate) {
21     this.processingRate = rate;
22 }
23
24 /** sets liver quality
25 * @param quality Double representation of liver quality (in percent)
26 */
27 public void setQuality(double quality) {
28     this.liverQuality = quality;
29 }
30
31 //ACCESSORS
32 /** returns liver processing rate
33 * @return processingRate Integer representing rate of liver processing
34 */
35 public int getRate() {
36     return processingRate;
37 }
38
39 /** returns liver quality
40 * @return liverQuality Double representation of liver quality (in percent)
41 */
42 public double getQuality() {
43     return liverQuality;
44 }
45
46 }
```

Human Javadoc:

Class Human

java.lang.Object
↳ Human

public class Human
extends java.lang.Object

Human objects with basic measurements and organs that can engage in activities altering many measurements and organ attributes

Constructor Summary

Constructors

Constructor and Description

Human(java.lang.String name, int age, double height, double weight, java.lang.String hairstyle)

Method Summary

All Methods **Instance Methods** **Concrete Methods**

Modifier and Type	Method and Description
void	poor() makes human drink booze increases: liver processing rate decreases: liver quality and brain quality
void	poorRest() Human break from drinking booze, brings liver processing rate and brain quality back to sober levels
void	checkVitals() returns printed version of all organ qualities and rates
void	eat(int calories) makes human object eat, calorie consumption
int	getAge() gets human age
double	getBrainQuality() returns brain quality
int	getBrainRate() returns brain activity rate
java.lang.String	getHairstyle() returns hair style
double	getHeartQuality() returns heart quality
int	getHeartRate() returns heart rate
double	getHeight() gets human's height
double	getLungQuality() getBreathingRate() getLiverQuality() returns lung quality
int	getLiverRate() returns liver processing rate
double	getRightingQuality() returns lungs quality
int	getRightingRate() returns lungs rate
int	getRightingRate() returns lungs rate
double	getWeight() gets weight of human
void	haircut(java.lang.String hair) changes human's hair style
void	run(double miles) makes human object run: increases: heart rate, breathing rate, lung quality decreases: weight Weight Calculation: calories burned per mile based on weight, converted into pounds
void	runRest() makes human rest from run activity, brings heart rate and breathing rate back to resting levels
void	setWeight(double weight) sets weight of human
void	sit() makes human sit, decreasing heart rate
void	sleep() makes human object sleep decreases: heart rate, breathing rate, brain activity rate, weight Weight Calculation: average sedentary calories burned in a day, converted into pounds
void	smoke() makes human smoke, decreasing lung and heart quality
void	wakeUp() makes human wake up, brings brain activity rate, heart rate, and breathing rate back to waking levels
void	walk(double miles) makes human object walk: increases: heart rate, breathing rate, lung quality decreases: weight Weight Calculation: calories burned per mile based on weight, converted into pounds
void	walkRest() makes human rest from walk activity brings heart rate and breathing rate back to resting levels

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait

Constructor Detail

Human

public Human(java.lang.String name,
int age,
double height,
double weight,
java.lang.String hairstyle)

Method Detail

setWeight

public void setWeight(double weight)
sets weight of human

Parameters:
weight - Weight in pounds as floating number

run

public void run(double miles)

```

makes human object run: increases: heart rate, breathing rate, lung quality decreases: weight Weight Calculation: calories burned per mile based on weight, converted into pounds
Parameters:
miles - Floating point representation of distance ran in miles

runRest
public void runRest()
makes human rest from run activity, brings heart rate and breathing rate back to resting levels

walk
public void walk(double miles)
makes human object walk: increases: heart rate, breathing rate, lung quality decreases: weight Weight Calculation: calories burned per mile based on weight, converted into pounds
Parameters:
miles - Floating point representation of distance walked in miles

walkRest
public void walkRest()
makes human rest from walk activity brings heart rate and breathing rate back to resting levels

eat
public void eat(int calories)
makes human object eat, calorie consumption
Parameters:
calories - Whole number amount of calories consumed

sleep
public void sleep()
makes human object sleep decreases: heart rate, breathing rate, brain activity rate, weight Weight Calculation: average sedentary calories burned in a day, converted into pounds

wakeUp
public void wakeUp()
makes human wake up, brings brain activity rate, heart rate, and breathing rate back to waking levels

sit
public void sit()
makes human sit, decreasing heart rate

haircut
public void haircut(java.lang.String hair)
changes human's hair style
Parameters:
hair - String establishing new hair style from haircut

booz
public void booz()
makes human drink booze increases: liver processing rate decreases: liver quality and brain quality

boozRest
public void boozRest()
human break from drinking booze, brings liver processing rate and brain quality back to sober levels

smoke
public void smoke()
makes human smoke, decreasing lung and heart quality

getAge
public int getAge()
gets human age
Returns:
age Integer representation of age

getHeight
public double getHeight()
gets human's height
Returns:
height Double representation of human height in feet

getWeight
public double getWeight()
gets weight of human
Returns:
weight Floating point representation of human weight in pounds

getHairStyle
public java.lang.String getHairStyle()
returns hair style
Returns:
hairStyle String stating person's current hair style

getHeartRate
public int getHeartRate()
returns heart rate
Returns:
heartRate Integer representing heart rate (BPM)

getHeartQuality
public double getHeartQuality()

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    returns heart quality
    Returns:
    heartQuality Double representation of heart quality (in percent)

    getRightLungRate
    public int getRightLungRate()
    returns lungs rate
    Returns:
    breathingRate Integer representing breaths per minute

    getLeftLungRate
    public int getLeftLungRate()

    getRightLungQuality
    public double getRightLungQuality()
    returns lungs quality
    Returns:
    lungQuality Double representation of lungs quality (in percent)

    getLeftLungQuality
    public double getLeftLungQuality()

    getLiverRate
    public int getLiverRate()
    returns liver processing rate
    Returns:
    processingRate Integer representing rate of liver processing

    getLiverQuality
    public double getLiverQuality()
    returns liver quality
    Returns:
    liverQuality Double representation of liver quality (in percent)

    getBrainRate
    public int getBrainRate()
    returns brain activity rate
    Returns:
    brainActivityRate Integer representing rate of brain activity (beta wave cycles/second)

    getBrainQuality
    public double getBrainQuality()

    getBrainQuality
    public double getBrainQuality()

    checkVitals
    public void checkVitals()
    returns printed version of all organ qualities and rates

```

Heart Javadoc:

Class Heart

java.lang.Object
--> Heart

Constructor Summary

Constructors

Constructor and Description

Heart()

Method Summary

All Methods	Instance Methods	Concrete Methods
Modifier and Type	Method and Description	
double	getRate() returns heart quality	
int	getRate() returns heart rate	
void	setQuality(double quality) returns heart quality	
void	setRate(int rate) returns heart rate	

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Constructor Detail

Heart

public Heart()

Method Detail

setRate

public void setRate(int rate)
returns heart rate
Parameters:
rate - Integer representing heart rate (BPM)

setQuality

public void setQuality(double quality)

getRate

public int getRate()
returns heart rate
Returns:
heartRate Integer representing heart rate (BPM)

getQuality

public double getQuality()
returns heart quality
Returns:
heartQuality Double representation of heart quality (in percent)

Brain Javadoc:

Class Brain

java.lang.Object
Brain

public class Brain
extends java.lang.Object

Lungs subclass of Human class that have attributes altered by human activities

Constructor Summary

Constructors

Constructor and Description

Brain()

Method Summary

All Methods Instance Methods Concrete Methods

Modifier and Type	Method and Description
double	getQuality() returns brain quality
int	getRate() returns brain activity rate
void	setQuality(double quality) sets brain quality
void	setRate(int rate) sets brain activity rate

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Constructor Detail

Brain

public Brain()

Method Detail

setRate

public void setRate(int rate)
sets brain activity rate

Parameters:

rate - Integer representing rate of brain activity (beta wave cycles/second)

setQuality

public void setQuality(double Quality)
sets brain quality

setQuality

public void setQuality(double Quality)
sets brain quality

Parameters:

Quality - Double representation of brain quality (in percent)

getRate

public int getRate()
returns brain activity rate

Returns:

brainActivityRate Integer representing rate of brain activity (beta wave cycles/second)

getQuality

public double getQuality()
returns brain quality

Returns:

brainQuality Double representation of liver quality (in percent)

Left Lung Javadoc:

Class LeftLung

java.lang.Object
LeftLung

public class LeftLung
extends java.lang.Object

Lungs subclass of Human class that have attributes altered by human activities

Constructor Summary

Constructors

Constructor and Description

LeftLung()

Method Summary

All Methods Instance Methods Concrete Methods

Modifier and Type	Method and Description
double	getQuality() returns lung quality
int	getRate() returns lungs rate
void	setQuality(double quality) sets lung quality
void	setRate(int rate) sets lung rate

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Constructor Detail

LeftLung

public LeftLung()

Method Detail

setRate

public void setRate(int rate)
sets lungs rate

Parameters:

rate - Integer representing breaths per minute

setQuality

public void setQuality(double quality)
sets lung quality

```

setQuality
public void setQuality(double quality)
sets lungs quality
Parameters:
quality - Double representation of lungs quality (in percent)

getRate
public int getRate()
returns lungs rate
Returns:
breathingRate Integer representing breaths per minute

getQuality
public double getQuality()
returns lungs quality
Returns:
lungsQuality Double representation of lungs quality (in percent)

```

Right Lung Javadoc:

Class RightLung

java.lang.Object
RightLung

```

public class RightLung
extends java.lang.Object

Lungs subclass of Human class that have attributes altered by human activities

```

Constructor Summary

Constructors
Constructor and Description

RightLung()

Method Summary

All Methods	Instance Methods	Concrete Methods
-------------	------------------	------------------

Modifier and Type	Method and Description
double	getQuality() returns lungs quality
int	getRate() returns lungs rate
void	setQuality(double quality) sets lungs quality
void	setRate(int rate) sets lungs rate

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Constructor Detail

RightLung
public RightLung()

Method Detail

setRate

```

public void setRate(int rate)
sets lungs rate
Parameters:
rate - Integer representing breaths per minute

```

setQuality

```

public void setQuality(double quality)

```

getQuality

```

public void setQuality(double quality)
sets lungs quality
Parameters:
quality - Double representation of lungs quality (in percent)

```

getRate

```

public int getRate()
returns lungs rate
Returns:
breathingRate Integer representing breaths per minute

```

getQuality

```

public double getQuality()
returns lungs quality
Returns:
lungsQuality Double representation of lungs quality (in percent)

```

Liver Javadoc:

Class Liver

java.lang.Object

 Liver

public class Liver

extends java.lang.Object

Liver subclass of Human class that have attributes altered by human activities

Constructor Summary

Constructors

Constructor and Description

Liver()

Method Summary

All Methods Instance Methods Concrete Methods

Modifier and Type	Method and Description
double	getQuality() returns liver quality
int	getRate() returns liver processing rate
void	setQuality(double quality) sets liver quality
void	setRate(int rate) sets liver processing rate

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Constructor Detail

Liver

public Liver()

Method Detail

setRate

public void setRate(int rate)
sets liver processing rate

Parameters:
rate - Integer representing rate of liver processing

setQuality

public void setQuality(double quality)
sets liver quality

getRate

public int getRate()
returns liver processing rate

Returns:
processingRate Integer representing rate of liver processing

getQuality

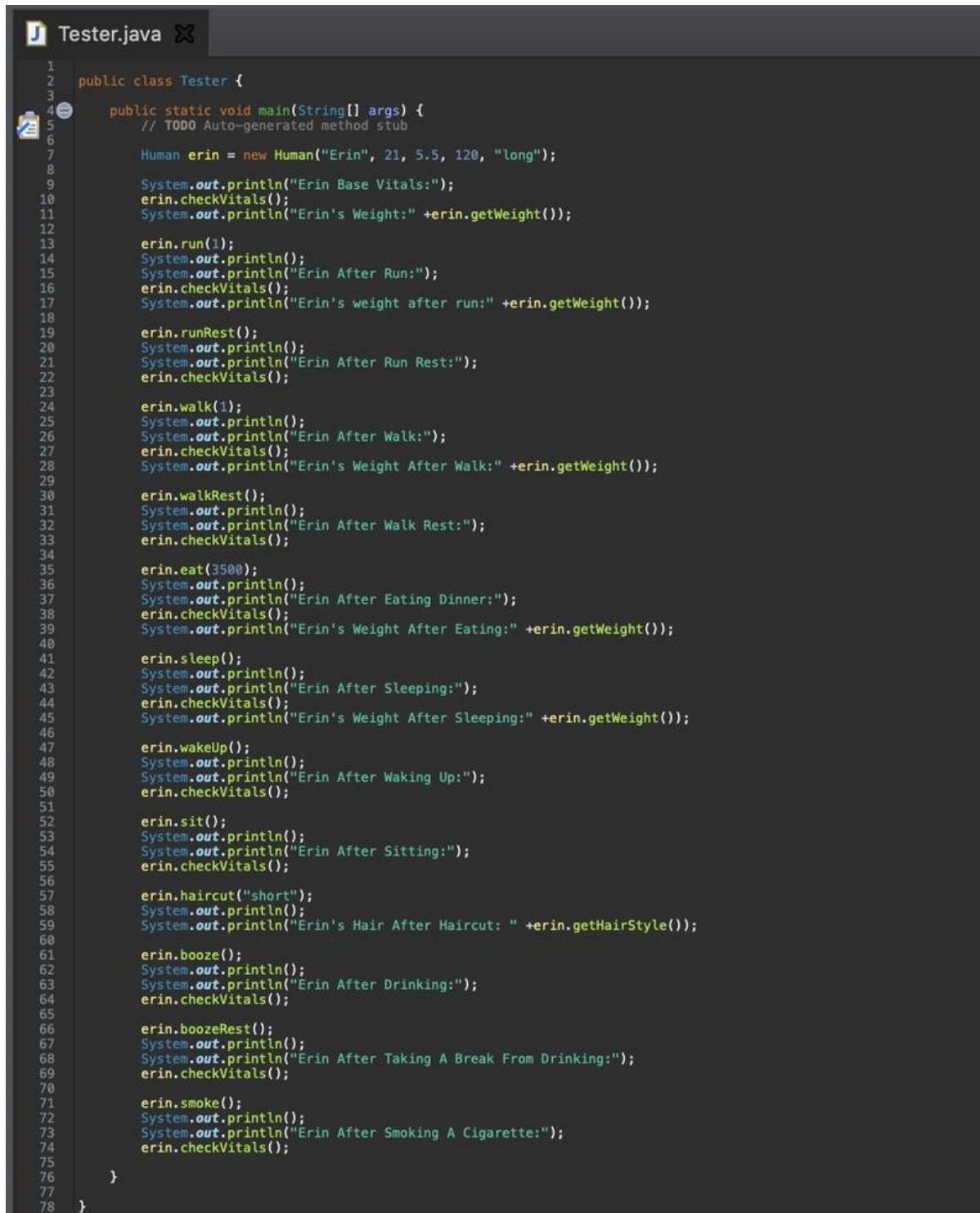
public double getQuality()
returns liver quality

Returns:
liverQuality Double representation of liver quality (in percent)

Testing Summary:

The results below illustrate two instantiated human objects and the results from the “actions” these humans engaged in. All mutators used upon our human objects resulted in accurate changes for each of the instance variables. The tables below show both expected and actual results. The designer charts and pseudocode lined up accurately with the code presented by the programmer. The only difference in the design process versus the given code was the additional getter of checkVitals which has allowed us to see all organ rates and qualities in one method.

TEST CASE I CODE:



The screenshot shows a Java code editor with a dark theme. The file is named 'Tester.java'. The code is a test case for a 'Human' class, demonstrating various methods like running, walking, eating, sleeping, and checking vital stats. The code uses System.out.println to output the results of each action.

```
1 public class Tester {
2
3     public static void main(String[] args) {
4         // TODO Auto-generated method stub
5
6         Human erin = new Human("Erin", 21, 5.5, 120, "long");
7
8         System.out.println("Erin Base Vitals:");
9         erin.checkVitals();
10        System.out.println("Erin's Weight:" + erin.getWeight());
11
12        erin.run(1);
13        System.out.println();
14        System.out.println("Erin After Run:");
15        erin.checkVitals();
16        System.out.println("Erin's weight after run:" + erin.getWeight());
17
18        erin.runRest();
19        System.out.println();
20        System.out.println("Erin After Run Rest:");
21        erin.checkVitals();
22
23        erin.walk(1);
24        System.out.println();
25        System.out.println("Erin After Walk:");
26        erin.checkVitals();
27        System.out.println("Erin's Weight After Walk:" + erin.getWeight());
28
29        erin.walkRest();
30        System.out.println();
31        System.out.println("Erin After Walk Rest:");
32        erin.checkVitals();
33
34        erin.eat(3500);
35        System.out.println();
36        System.out.println("Erin After Eating Dinner:");
37        erin.checkVitals();
38        System.out.println("Erin's Weight After Eating:" + erin.getWeight());
39
40        erin.sleep();
41        System.out.println();
42        System.out.println("Erin After Sleeping:");
43        erin.checkVitals();
44        System.out.println("Erin's Weight After Sleeping:" + erin.getWeight());
45
46        erin.wakeUp();
47        System.out.println();
48        System.out.println("Erin After Waking Up:");
49        erin.checkVitals();
50
51        erin.sit();
52        System.out.println();
53        System.out.println("Erin After Sitting:");
54        erin.checkVitals();
55
56        erin.haircut("short");
57        System.out.println();
58        System.out.println("Erin's Hair After Haircut: " + erin.getHairstyle());
59
60        erin.booze();
61        System.out.println();
62        System.out.println("Erin After Drinking:");
63        erin.checkVitals();
64
65        erin.boozeRest();
66        System.out.println();
67        System.out.println("Erin After Taking A Break From Drinking:");
68        erin.checkVitals();
69
70        erin.smoke();
71        System.out.println();
72        System.out.println("Erin After Smoking A Cigarette:");
73        erin.checkVitals();
74
75    }
76
77}
78 }
```

TEST CASE I RESULTS

Erin Test Case

Method	Expected Result	Actual Result
Run (1 mile)	Heart rate: 120 bpm Breathing rate: 35 breaths/min Lung quality (R): 100.5% Lung quality (L): 85.5% Weight: 119.97	Heart rate: 120 bpm Breathing rate: 35 breaths/min Lung quality (R): 100.5% Lung quality (L): 85.5% Weight: 119.97
runRest	Heart rate: 80 bpm Breathing rate: 15 breaths/min	Heart rate: 80 bpm Breathing rate: 15 breaths/min
Walk (1 mile)	Heart rate: 100 bpm Breathing rate: 20 breaths/min Lung quality (R): 100.75% Lung quality (L): 85.75% Weight: 119.95	Heart rate: 100 bpm Breathing rate: 20 breaths/min Lung quality (R): 100.75% Lung quality (L): 85.75% Weight: 119.95
walkRest	Heart rate: 80 bpm Breathing rate: 15 breaths/min	Heart rate: 80 bpm Breathing rate: 15 breaths/min
Eat (3500 calories)	Weight: 120.95	Weight: 120.95
Sleep	Heart rate: 60 bpm Breathing rate: 10 breaths/min Brain activity rate: 20 beta wave cycles/sec Weight: 120.38	Heart rate: 60 bpm Breathing rate: 10 breaths/min Brain activity rate: 20 beta wave cycles/sec Weight: 120.38
wakeUp	Heart rate: 80 bpm Brain activity rate: 30 beta wave cycles/sec Breathing rate: 15 breaths/min	Heart rate: 80 bpm Brain activity rate: 30 beta wave cycles/sec Breathing rate: 15 breaths/min
sit	Heart rate: 70 bpm	Heart rate: 70 bpm
haircut	New hairstyle: short hair	New hairstyle: short hair
booze	Liver processing rate: 95 Liver quality: 99% Brain quality: 80%	Liver processing rate: 95 Liver quality: 99% Brain quality: 80%
boozeRest	Liver processing rate: 80 Brain quality: 99%	Liver processing rate: 80 Brain quality: 99%
smoke	Lung quality (R): 99.75% Lung quality (L): 84.75% Heart quality: 98%	Lung quality (R): 99.75% Lung quality (L): 84.75% Heart quality: 98%

Test Case I Console Output

```
Problems 0 JavaDoc Declaration Console
<terminated> [2] Java Application [/Library/Java/JavaVirtualMachines/jdk1.8.0_261.jdk/Contents/Home/bin/java] (Oct 19, 2020 4:32:25 PM - 4:32:25 PM)
Erin Base Vitals:
Erin's Brain Activity Rate is: 30 beta wave cycles per second
Erin's Brain Quality is: 100.0%
Erin's Heart Rate is: 80 beats per minute
Erin's Heart Quality is: 100.0%
Erin's Right Lung Breathing Rate is: 15 breaths per minute
Erin's Left Lung Breathing Rate is: 15 breaths per minute
Erin's Right Lung Quality is: 100.0%
Erin's Left Lung Quality is: 85.0%
Erin's Liver Processing Rate is: 80
Erin's Liver Quality is: 100.0%
Erin's Weight:120.0

Erin After Run:
Erin's Brain Activity Rate is: 30 beta wave cycles per second
Erin's Brain Quality is: 100.0%
Erin's Heart Rate is: 120 beats per minute
Erin's Heart Quality is: 100.0%
Erin's Right Lung Breathing Rate is: 35 breaths per minute
Erin's Left Lung Breathing Rate is: 35 breaths per minute
Erin's Right Lung Quality is: 100.5%
Erin's Left Lung Quality is: 85.5%
Erin's Liver Processing Rate is: 80
Erin's Liver Quality is: 100.0%
Erin's weight after run:119.97428571428571

Erin After Run Rest:
Erin's Brain Activity Rate is: 30 beta wave cycles per second
Erin's Brain Quality is: 100.0%
Erin's Heart Rate is: 80 beats per minute
Erin's Heart Quality is: 100.0%
Erin's Right Lung Breathing Rate is: 15 breaths per minute
Erin's Left Lung Breathing Rate is: 15 breaths per minute
Erin's Right Lung Quality is: 100.5%
Erin's Left Lung Quality is: 85.5%
Erin's Liver Processing Rate is: 80
Erin's Liver Quality is: 100.0%

Erin After Walk:
Erin's Brain Activity Rate is: 30 beta wave cycles per second
Erin's Brain Quality is: 100.0%
Erin's Heart Rate is: 100 beats per minute
Erin's Heart Quality is: 100.0%
Erin's Right Lung Breathing Rate is: 20 breaths per minute
Erin's Left Lung Breathing Rate is: 20 breaths per minute
Erin's Right Lung Quality is: 100.75%
Erin's Left Lung Quality is: 85.75%
Erin's Liver Processing Rate is: 80
Erin's Liver Quality is: 100.0%
Erin's Weight After Walk:119.95714653061225

Erin After Walk Rest:
Erin's Brain Activity Rate is: 30 beta wave cycles per second
Erin's Brain Quality is: 100.0%
Erin's Heart Rate is: 80 beats per minute
Erin's Heart Quality is: 100.0%
Erin's Right Lung Breathing Rate is: 15 breaths per minute
Erin's Left Lung Breathing Rate is: 15 breaths per minute
Erin's Right Lung Quality is: 100.75%
Erin's Left Lung Quality is: 85.75%
Erin's Liver Processing Rate is: 80
Erin's Liver Quality is: 100.0%

Erin After Eating Dinner:
Erin's Brain Activity Rate is: 30 beta wave cycles per second
Erin's Brain Quality is: 100.0%
Erin's Heart Rate is: 80 beats per minute
Erin's Heart Quality is: 100.0%
Erin's Right Lung Breathing Rate is: 15 breaths per minute
Erin's Left Lung Breathing Rate is: 15 breaths per minute
Erin's Right Lung Quality is: 100.75%
Erin's Left Lung Quality is: 85.75%
Erin's Liver Processing Rate is: 80
Erin's Liver Quality is: 100.0%
Erin's Weight After Eating:120.95714653061225
```

```
Erin After Sleeping:  
Erin's Brain Activity Rate is: 20 beta wave cycles per second  
Erin's Brain Quality is: 100.0%  
Erin's Heart Rate is: 60 beats per minute  
Erin's Heart Quality is: 100.0%  
Erin's Right Lung Breathing Rate is: 10 breaths per minute  
Erin's Left Lung Breathing Rate is: 10 breaths per minute  
Erin's Right Lung Quality is: 100.75%  
Erin's Left Lung Quality is: 85.75%  
Erin's Liver Processing Rate is: 80  
Erin's Liver Quality is: 100.0%  
Erin's Weight After Sleeping:120.38714653061226  
  
Erin After Waking Up:  
Erin's Brain Activity Rate is: 30 beta wave cycles per second  
Erin's Brain Quality is: 100.0%  
Erin's Heart Rate is: 80 beats per minute  
Erin's Heart Quality is: 100.0%  
Erin's Right Lung Breathing Rate is: 15 breaths per minute  
Erin's Left Lung Breathing Rate is: 15 breaths per minute  
Erin's Right Lung Quality is: 100.75%  
Erin's Left Lung Quality is: 85.75%  
Erin's Liver Processing Rate is: 80  
Erin's Liver Quality is: 100.0%  
  
Erin After Sitting:  
Erin's Brain Activity Rate is: 30 beta wave cycles per second  
Erin's Brain Quality is: 100.0%  
Erin's Heart Rate is: 70 beats per minute  
Erin's Heart Quality is: 100.0%  
Erin's Right Lung Breathing Rate is: 15 breaths per minute  
Erin's Left Lung Breathing Rate is: 15 breaths per minute  
Erin's Right Lung Quality is: 100.75%  
Erin's Left Lung Quality is: 85.75%  
Erin's Liver Processing Rate is: 80  
Erin's Liver Quality is: 100.0%  
  
Erin's Hair After Haircut: short  
  
Erin After Drinking:  
Erin's Brain Activity Rate is: 30 beta wave cycles per second  
Erin's Brain Quality is: 80.0%  
Erin's Heart Rate is: 70 beats per minute  
Erin's Heart Quality is: 100.0%  
Erin's Right Lung Breathing Rate is: 15 breaths per minute  
Erin's Left Lung Breathing Rate is: 15 breaths per minute  
Erin's Right Lung Quality is: 100.75%  
Erin's Left Lung Quality is: 85.75%  
Erin's Liver Processing Rate is: 95  
Erin's Liver Quality is: 99.0%  
  
Erin After Taking A Break From Drinking:  
Erin's Brain Activity Rate is: 30 beta wave cycles per second  
Erin's Brain Quality is: 99.0%  
Erin's Heart Rate is: 70 beats per minute  
Erin's Heart Quality is: 100.0%  
Erin's Right Lung Breathing Rate is: 15 breaths per minute  
Erin's Left Lung Breathing Rate is: 15 breaths per minute  
Erin's Right Lung Quality is: 100.75%  
Erin's Left Lung Quality is: 85.75%  
Erin's Liver Processing Rate is: 80  
Erin's Liver Quality is: 99.0%  
  
Erin After Smoking A Cigarette:  
Erin's Brain Activity Rate is: 30 beta wave cycles per second  
Erin's Brain Quality is: 99.0%  
Erin's Heart Rate is: 70 beats per minute  
Erin's Heart Quality is: 98.0%  
Erin's Right Lung Breathing Rate is: 15 breaths per minute  
Erin's Left Lung Breathing Rate is: 15 breaths per minute  
Erin's Right Lung Quality is: 99.75%  
Erin's Left Lung Quality is: 84.75%  
Erin's Liver Processing Rate is: 80  
Erin's Liver Quality is: 99.0%
```

TEST CASE II CODE

```
1  public class Tester2 {
2
3     public static void main(String[] args) {
4         // TODO Auto-generated method stub
5
6         Human jack = new Human("Jack", 30, 6.1, 145, "straight");
7
8         System.out.println("Jack Base Vitals:");
9         jack.checkVitals();
10        System.out.println("Jack's Weight:" +jack.getWeight());
11
12        jack.run(4);
13        System.out.println();
14        System.out.println("Jack After Run:");
15        jack.checkVitals();
16        System.out.println("Jack's weight after run:" +jack.getWeight());
17
18        jack.runRest();
19        System.out.println();
20        System.out.println("Jack After Run Rest:");
21        jack.checkVitals();
22
23        jack.walk(2);
24        System.out.println();
25        System.out.println("Jack After Walk:");
26        jack.checkVitals();
27        System.out.println("Jack's Weight After Walk:" +jack.getWeight());
28
29        jack.walkRest();
30        System.out.println();
31        System.out.println("Jack After Walk Rest:");
32        jack.checkVitals();
33
34        jack.eat(4000);
35        System.out.println();
36        System.out.println("Jack After Eating 5 Meals A Day:");
37        jack.checkVitals();
38        System.out.println("Jack's Weight After Eating:" +jack.getWeight());
39
40        jack.sleep();
41        System.out.println();
42        System.out.println("Jack After Sleeping:");
43        jack.checkVitals();
44        System.out.println("Jack's Weight After Sleeping:" +jack.getWeight());
45
46        jack.wakeUp();
47        System.out.println();
48        System.out.println("Jack After Waking Up:");
49        jack.checkVitals();
50
51        jack.sit();
52        System.out.println();
53        System.out.println("Jack After Sitting:");
54        jack.checkVitals();
55
56        jack.haircut("curly");
57        System.out.println();
58        System.out.println("Jack's Hair After A Perm: " +jack.getHairstyle());
59
60        jack.booze();
61        System.out.println();
62        System.out.println("Jack After Drinking:");
63        jack.checkVitals();
64
65        jack.boozeRest();
66        System.out.println();
67        System.out.println("Jack After Taking A Break From Drinking:");
68        jack.checkVitals();
69
70        jack.smoke();
71        System.out.println();
72        System.out.println("Jack After Smoking A Cigarette:");
73        jack.checkVitals();
74
75    }
76
77 }
78 }
```

TEST CASE II RESULTS

Jack Test Case

Methods	Expected Results	Actual Results
Run (4 miles)	Heart rate: 120 bpm Breathing rate: 35 breaths/min Lung quality (R): 102% Lung quality (L): 87% Weight: 144.88	Heart rate: 120 bpm Breathing rate: 35 breaths/min Lung quality (R): 102% Lung quality (L): 87% Weight: 144.88
runRest	Heart rate: 80 bpm Breathing rate: 15 breaths/min	Heart rate: 80 bpm Breathing rate: 15 breaths/min
Walk (2 miles)	Heart rate: 100 bpm Breathing rate: 20 breaths/min Lung quality (R): 102.5% Lung quality (L): 85.5% Weight: 144.83	Heart rate: 100 bpm Breathing rate: 20 breaths/min Lung quality (R): 102.5% Lung quality (L): 85.5% Weight: 144.83
walkRest	Heart rate: 80 bpm Breathing rate: 15 breaths/min	Heart rate: 80 bpm Breathing rate: 15 breaths/min
Eat (4000 calories)	Weight: 145.83	Weight: 145.83
Sleep	Heart rate: 60 bpm Breathing rate: 10 breaths/min Brain activity rate: 20 beta wave cycles/sec Weight: 145.26	Heart rate: 60 bpm Breathing rate: 10 breaths/min Brain activity rate: 20 beta wave cycles/sec Weight: 145.26
wakeUp	Heart rate: 80 bpm Brain activity rate: 30 beta wave cycles/sec Breathing rate: 15 breaths/min	Heart rate: 80 bpm Brain activity rate: 30 beta wave cycles/sec Breathing rate: 15 breaths/min
sit	Heart rate: 70 bpm	Heart rate: 70 bpm
haircut	New hairstyle: curly	New hairstyle: curly
booze	Liver processing rate: 95 Liver quality: 99% Brain quality: 80%	Liver processing rate: 95 Liver quality: 99% Brain quality: 80%
boozeRest	Liver processing rate: 80 Brain quality: 99%	Liver processing rate: 80 Brain quality: 99%
smoke	Lung quality (R): 101.5% Lung quality (L): 86.5% Heart quality: 98%	Lung quality (R): 101.5% Lung quality (L): 86.5% Heart quality: 98%

TEST CASE II Console Output

```
Problems JavaDoc Declaration Console
JavaWorlds Tester 2 [Java Application] /Users/JavaWorlds/JavaMachine/jdk1.8.0_261/jdk/Contents/Home/bin/java (Oct 19, 2020 11:33:54 PM - 11:33:55 PM)
Jack Base Vitals:
Jack's Brain Activity Rate is: 30 beta wave cycles per second
Jack's Brain Quality is: 100.0%
Jack's Heart Rate is: 80 beats per minute
Jack's Heart Quality is: 100.0%
Jack's Right Lung Breathing Rate is: 15 breaths per minute
Jack's Left Lung Breathing Rate is: 15 breaths per minute
Jack's Right Lung Quality is: 100.0%
Jack's Left Lung Quality is: 85.0%
Jack's Liver Processing Rate is: 80
Jack's Liver Quality is: 100.0%
Jack's Weight:145.0

Jack After Run:
Jack's Brain Activity Rate is: 30 beta wave cycles per second
Jack's Brain Quality is: 100.0%
Jack's Heart Rate is: 120 beats per minute
Jack's Heart Quality is: 100.0%
Jack's Right Lung Breathing Rate is: 35 breaths per minute
Jack's Left Lung Breathing Rate is: 35 breaths per minute
Jack's Right Lung Quality is: 102.0%
Jack's Left Lung Quality is: 87.0%
Jack's Liver Processing Rate is: 80
Jack's Liver Quality is: 100.0%
Jack's weight after run:144.87571428571428

Jack After Run Rest:
Jack's Brain Activity Rate is: 30 beta wave cycles per second
Jack's Brain Quality is: 100.0%
Jack's Heart Rate is: 80 beats per minute
Jack's Heart Quality is: 100.0%
Jack's Right Lung Breathing Rate is: 15 breaths per minute
Jack's Left Lung Breathing Rate is: 15 breaths per minute
Jack's Right Lung Quality is: 102.0%
Jack's Left Lung Quality is: 87.0%
Jack's Liver Processing Rate is: 80
Jack's Liver Quality is: 100.0%

Jack After Walk:
Jack's Brain Activity Rate is: 30 beta wave cycles per second
Jack's Brain Quality is: 100.0%
Jack's Heart Rate is: 100 beats per minute
Jack's Heart Quality is: 100.0%
Jack's Right Lung Breathing Rate is: 20 breaths per minute
Jack's Left Lung Breathing Rate is: 20 breaths per minute
Jack's Right Lung Quality is: 102.5%
Jack's Left Lung Quality is: 87.5%
Jack's Liver Processing Rate is: 80
Jack's Liver Quality is: 100.0%
Jack's Weight After Walk:144.8343212244898

Jack After Walk Rest:
Jack's Brain Activity Rate is: 30 beta wave cycles per second
Jack's Brain Quality is: 100.0%
Jack's Heart Rate is: 80 beats per minute
Jack's Heart Quality is: 100.0%
Jack's Right Lung Breathing Rate is: 15 breaths per minute
Jack's Left Lung Breathing Rate is: 15 breaths per minute
Jack's Right Lung Quality is: 102.5%
Jack's Left Lung Quality is: 87.5%
Jack's Liver Processing Rate is: 80
Jack's Liver Quality is: 100.0%

Jack After Eating 5 Meals A Day:
Jack's Brain Activity Rate is: 30 beta wave cycles per second
Jack's Brain Quality is: 100.0%
Jack's Heart Rate is: 80 beats per minute
Jack's Heart Quality is: 100.0%
Jack's Right Lung Breathing Rate is: 15 breaths per minute
Jack's Left Lung Breathing Rate is: 15 breaths per minute
Jack's Right Lung Quality is: 102.5%
Jack's Left Lung Quality is: 87.5%
Jack's Liver Processing Rate is: 80
Jack's Liver Quality is: 100.0%
Jack's Weight After Eating:145.8343212244898
```

```
Jack After Sleeping:  
Jack's Brain Activity Rate is: 20 beta wave cycles per second  
Jack's Brain Quality is: 100.0%  
Jack's Heart Rate is: 60 beats per minute  
Jack's Heart Quality is: 100.0%  
Jack's Right Lung Breathing Rate is: 10 breaths per minute  
Jack's Left Lung Breathing Rate is: 10 breaths per minute  
Jack's Right Lung Quality is: 102.5%  
Jack's Left Lung Quality is: 87.5%  
Jack's Liver Processing Rate is: 80  
Jack's Liver Quality is: 100.0%  
Jack's Weight After Sleeping:145.2643212244898  
  
Jack After Waking Up:  
Jack's Brain Activity Rate is: 30 beta wave cycles per second  
Jack's Brain Quality is: 100.0%  
Jack's Heart Rate is: 80 beats per minute  
Jack's Heart Quality is: 100.0%  
Jack's Right Lung Breathing Rate is: 15 breaths per minute  
Jack's Left Lung Breathing Rate is: 15 breaths per minute  
Jack's Right Lung Quality is: 102.5%  
Jack's Left Lung Quality is: 87.5%  
Jack's Liver Processing Rate is: 80  
Jack's Liver Quality is: 100.0%  
  
Jack After Sitting:  
Jack's Brain Activity Rate is: 30 beta wave cycles per second  
Jack's Brain Quality is: 100.0%  
Jack's Heart Rate is: 70 beats per minute  
Jack's Heart Quality is: 100.0%  
Jack's Right Lung Breathing Rate is: 15 breaths per minute  
Jack's Left Lung Breathing Rate is: 15 breaths per minute  
Jack's Right Lung Quality is: 102.5%  
Jack's Left Lung Quality is: 87.5%  
Jack's Liver Processing Rate is: 80  
Jack's Liver Quality is: 100.0%  
  
Jack's Hair After A Perm: curly  
  
Jack After Drinking:  
Jack's Brain Activity Rate is: 30 beta wave cycles per second  
Jack's Brain Quality is: 80.0%  
Jack's Heart Rate is: 70 beats per minute  
Jack's Heart Quality is: 100.0%  
Jack's Right Lung Breathing Rate is: 15 breaths per minute  
Jack's Left Lung Breathing Rate is: 15 breaths per minute  
Jack's Right Lung Quality is: 102.5%  
Jack's Left Lung Quality is: 87.5%  
Jack's Liver Processing Rate is: 95  
Jack's Liver Quality is: 99.0%  
  
Jack After Taking A Break From Drinking:  
Jack's Brain Activity Rate is: 30 beta wave cycles per second  
Jack's Brain Quality is: 99.0%  
Jack's Heart Rate is: 70 beats per minute  
Jack's Heart Quality is: 100.0%  
Jack's Right Lung Breathing Rate is: 15 breaths per minute  
Jack's Left Lung Breathing Rate is: 15 breaths per minute  
Jack's Right Lung Quality is: 102.5%  
Jack's Left Lung Quality is: 87.5%  
Jack's Liver Processing Rate is: 80  
Jack's Liver Quality is: 99.0%  
  
Jack After Smoking A Cigarette:  
Jack's Brain Activity Rate is: 30 beta wave cycles per second  
Jack's Brain Quality is: 99.0%  
Jack's Heart Rate is: 70 beats per minute  
Jack's Heart Quality is: 98.0%  
Jack's Right Lung Breathing Rate is: 15 breaths per minute  
Jack's Left Lung Breathing Rate is: 15 breaths per minute  
Jack's Right Lung Quality is: 101.5%  
Jack's Left Lung Quality is: 86.5%  
Jack's Liver Processing Rate is: 80  
Jack's Liver Quality is: 99.0%
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