

## Black Box Test Plan - Paycheck Program

### Requirements

Raleigh's Parks and Recreation Department hires landscapers to care for and maintain the city's parks.

An employee has one of three skill levels; each with a hourly pay rate:

Skill Level - Hourly Pay Rate (\$)

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Level 1 - \$19.00

Level 2 - \$22.50

Level 3 - \$25.75

All employees may opt in for insurance, which results in a deduction from their pay check.

Deduction - Weekly Cost (\$)

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Option 1 - Medical Insurance - \$24.50

Option 2 - Dental Insurance - \$15.30

Option 3 - Vision Insurance - \$5.25

Employees at skill level 3 may also opt to place up to 6% of their gross pay into a retirement account.

The following information is printed about the employee's pay check: 1) employee's name 2) hours worked for a week 3) hourly pay rate 4) regular pay for up to 40 hours worked 5) overtime pay (1.5 pay rate) for hours over 40 worked 6) gross pay (regular + overtime) 7) total deductions 8) net pay (gross pay – total deductions). If the net pay is negative, meaning the deductions exceeds the gross pay, then an error is printed.

## Black Box Test Plan Control Structures

The `Paycheck` program prompts the user for information about the Employee, including the name, level (1, 2, or 3), hours worked, retirement percent, and whether he or she has medical, dental, and vision insurances. This program assumes a perfect user. There is no error checking for user input based on data type.

The following commands compile and run the `Paycheck` program:

```
$ javac Paycheck.java
```

```
$ java Paycheck
```

## Black Box Test Plan

The text in bold in the **Description** column represents the test inputs to the program. You can stop program execution by

## Black Box Test Plan Control Structures

Test ID	Description	Expected Results	Actual Results																
Boundary regular hours, All insurances, Level 1	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Alice Anderson</b> Employee Level: <b>1</b> Hours Worked: <b>0</b> Medical Insurance (Y/N): <b>Y</b> Dental Insurance (Y/N): <b>Y</b> Vision Insurance (Y/N): <b>Y</b>	<Error Message>																	
Boundary regular hours, Two insurances, Level 1	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Bob Baker</b> Employee Level: <b>1</b> Hours Worked: <b>1</b> Medical Insurance (Y/N): <b>N</b> Dental Insurance (Y/N): <b>Y</b> Vision Insurance (Y/N): <b>Y</b>	<Error Message>																	
Mid-range regular hours, Two insurances, Level 1	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Carol Cole</b> Employee Level: <b>1</b> Hours Worked: <b>10</b> Medical Insurance (Y/N): <b>Y</b> Dental Insurance (Y/N): <b>N</b> Vision Insurance (Y/N): <b>Y</b>	<table border="1"> <thead> <tr> <th>Name</th> <th>Hours</th> <th>PayRate</th> <th>Regular</th> <th>OT</th> <th>Gross</th> <th>Deduc.</th> <th>Net</th> </tr> </thead> <tbody> <tr> <td>Carol Cole</td> <td>10.00</td> <td>19.00</td> <td>190.00</td> <td>0.00</td> <td>190.00</td> <td>29.75</td> <td>160.25</td> </tr> </tbody> </table>	Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net	Carol Cole	10.00	19.00	190.00	0.00	190.00	29.75	160.25	
Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net												
Carol Cole	10.00	19.00	190.00	0.00	190.00	29.75	160.25												
Mid-range regular hours, Two insurances, Level 1	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Danny D David</b> Employee Level: <b>1</b> Hours Worked: <b>20</b> Medical Insurance (Y/N): <b>Y</b> Dental Insurance (Y/N): <b>Y</b> Vision Insurance (Y/N): <b>N</b>	<table border="1"> <thead> <tr> <th>Name</th> <th>Hours</th> <th>PayRate</th> <th>Regular</th> <th>OT</th> <th>Gross</th> <th>Deduc.</th> <th>Net</th> </tr> </thead> <tbody> <tr> <td>Danny D David</td> <td>20.00</td> <td>19.00</td> <td>380.00</td> <td>0.00</td> <td>380.00</td> <td>39.80</td> <td>340.20</td> </tr> </tbody> </table>	Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net	Danny D David	20.00	19.00	380.00	0.00	380.00	39.80	340.20	
Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net												
Danny D David	20.00	19.00	380.00	0.00	380.00	39.80	340.20												
Boundary regular hours, One insurance, Level 1	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Ellen Edwards</b> Employee Level: <b>1</b> Hours Worked: <b>39</b> Medical Insurance (Y/N): <b>N</b> Dental Insurance (Y/N): <b>N</b> Vision Insurance (Y/N): <b>Y</b>	<table border="1"> <thead> <tr> <th>Name</th> <th>Hours</th> <th>PayRate</th> <th>Regular</th> <th>OT</th> <th>Gross</th> <th>Deduc.</th> <th>Net</th> </tr> </thead> <tbody> <tr> <td>Ellen Edwards</td> <td>39.00</td> <td>19.00</td> <td>741.00</td> <td>0.00</td> <td>741.00</td> <td>5.25</td> <td>735.75</td> </tr> </tbody> </table>	Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net	Ellen Edwards	39.00	19.00	741.00	0.00	741.00	5.25	735.75	
Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net												
Ellen Edwards	39.00	19.00	741.00	0.00	741.00	5.25	735.75												

## Black Box Test Plan Control Structures

Test ID	Description	Expected Results	Actual Results																
Boundary regular hours, One insurance, Level 1	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Frank Frankenstein</b> Employee Level: <b>1</b> Hours Worked: <b>40</b> Medical Insurance (Y/N): <b>Y</b> Dental Insurance (Y/N): <b>N</b> Vision Insurance (Y/N): <b>N</b>	<table border="1"> <thead> <tr> <th>Name</th> <th>Hours</th> <th>PayRate</th> <th>Regular</th> <th>OT</th> <th>Gross</th> <th>Deduc.</th> <th>Net</th> </tr> </thead> <tbody> <tr> <td>Frank Frankenstein</td> <td>40.00</td> <td>19.00</td> <td>760.00</td> <td>0.00</td> <td>760.00</td> <td>24.50</td> <td>735.50</td> </tr> </tbody> </table>	Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net	Frank Frankenstein	40.00	19.00	760.00	0.00	760.00	24.50	735.50	
Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net												
Frank Frankenstein	40.00	19.00	760.00	0.00	760.00	24.50	735.50												
Boundary overtime hours, One insurance, Level 1	<b>Preconditions:</b> Paycheck program started Employee Name: <b>George George</b> Employee Level: <b>1</b> Hours Worked: <b>41</b> Medical Insurance (Y/N): <b>N</b> Dental Insurance (Y/N): <b>Y</b> Vision Insurance (Y/N): <b>N</b>	<table border="1"> <thead> <tr> <th>Name</th> <th>Hours</th> <th>PayRate</th> <th>Regular</th> <th>OT</th> <th>Gross</th> <th>Deduc.</th> <th>Net</th> </tr> </thead> <tbody> <tr> <td>George George</td> <td>41.00</td> <td>19.00</td> <td>760.00</td> <td>28.50</td> <td>788.50</td> <td>15.30</td> <td>773.20</td> </tr> </tbody> </table>	Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net	George George	41.00	19.00	760.00	28.50	788.50	15.30	773.20	
Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net												
George George	41.00	19.00	760.00	28.50	788.50	15.30	773.20												
Mid-range overtime hours, No insurance, Level 1	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Hilda Henderson</b> Employee Level: <b>1</b> Hours Worked: <b>50</b> Medical Insurance (Y/N): <b>N</b> Dental Insurance (Y/N): <b>N</b> Vision Insurance (Y/N): <b>N</b>	<table border="1"> <thead> <tr> <th>Name</th> <th>Hours</th> <th>PayRate</th> <th>Regular</th> <th>OT</th> <th>Gross</th> <th>Deduc.</th> <th>Net</th> </tr> </thead> <tbody> <tr> <td>Hilda Henderson</td> <td>50.00</td> <td>19.00</td> <td>760.00</td> <td>285.00</td> <td>1045.00</td> <td>0.00</td> <td>1045.00</td> </tr> </tbody> </table>	Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net	Hilda Henderson	50.00	19.00	760.00	285.00	1045.00	0.00	1045.00	
Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net												
Hilda Henderson	50.00	19.00	760.00	285.00	1045.00	0.00	1045.00												
Boundary regular hours, All insurances, Level 2	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Alice Anderson</b> Employee Level: <b>2</b> Hours Worked: <b>0</b> Medical Insurance (Y/N): <b>Y</b> Dental Insurance (Y/N): <b>Y</b> Vision Insurance (Y/N): <b>Y</b>	<Error Message>																	
Boundary regular hours, Two insurances, Level 2	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Bob Baker</b> Employee Level: <b>2</b> Hours Worked: <b>1</b> Medical Insurance (Y/N): <b>N</b> Dental Insurance (Y/N): <b>Y</b> Vision Insurance (Y/N): <b>Y</b>	<table border="1"> <thead> <tr> <th>Name</th> <th>Hours</th> <th>PayRate</th> <th>Regular</th> <th>OT</th> <th>Gross</th> <th>Deduc.</th> <th>Net</th> </tr> </thead> <tbody> <tr> <td>Bob Baker</td> <td>1.00</td> <td>22.50</td> <td>22.50</td> <td>0.00</td> <td>22.50</td> <td>20.55</td> <td>1.95</td> </tr> </tbody> </table>	Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net	Bob Baker	1.00	22.50	22.50	0.00	22.50	20.55	1.95	
Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net												
Bob Baker	1.00	22.50	22.50	0.00	22.50	20.55	1.95												

## Black Box Test Plan Control Structures

Test ID	Description	Expected Results								Actual Results
Mid-range regular hours, Two insurances, Level 2	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Carol Cole</b> Employee Level: <b>2</b> Hours Worked: <b>10</b> Medical Insurance (Y/N): <b>Y</b> Dental Insurance (Y/N): <b>N</b> Vision Insurance (Y/N): <b>Y</b>	Name Carol Cole	Hours 10.00	PayRate 22.50	Regular 225.00	OT 0.00	Gross 225.00	Deduc. 29.75	Net 195.25	
Mid-range regular hours, Two insurances, Level 2	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Danny D David</b> Employee Level: <b>2</b> Hours Worked: <b>20</b> Medical Insurance (Y/N): <b>Y</b> Dental Insurance (Y/N): <b>Y</b> Vision Insurance (Y/N): <b>N</b>	Name Danny D David	Hours 20.00	PayRate 22.50	Regular 450.00	OT 0.00	Gross 450.00	Deduc. 39.80	Net 410.20	
Boundary regular hours, One insurance, Level 2	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Ellen Edwards</b> Employee Level: <b>2</b> Hours Worked: <b>39</b> Medical Insurance (Y/N): <b>N</b> Dental Insurance (Y/N): <b>N</b> Vision Insurance (Y/N): <b>Y</b>	Name Ellen Edwards	Hours 39.00	PayRate 22.50	Regular 877.50	OT 0.00	Gross 877.50	Deduc. 5.25	Net 872.25	
Boundary regular hours, One insurance, Level 2	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Frank Frankenstein</b> Employee Level: <b>2</b> Hours Worked: <b>40</b> Medical Insurance (Y/N): <b>Y</b> Dental Insurance (Y/N): <b>N</b> Vision Insurance (Y/N): <b>N</b>	Name Frank Frankenstein	Hours 40.00	PayRate 22.50	Regular 900.00	OT 0.00	Gross 900.00	Deduc. 24.50	Net 875.50	
Boundary overtime hours, One insurance, Level 2	<b>Preconditions:</b> Paycheck program started Employee Name: <b>George George</b> Employee Level: <b>2</b> Hours Worked: <b>41</b> Medical Insurance (Y/N): <b>N</b> Dental Insurance (Y/N): <b>Y</b> Vision Insurance (Y/N): <b>N</b>	Name George George	Hours 41.00	PayRate 22.50	Regular 900.00	OT 33.75	Gross 933.75	Deduc. 15.30	Net 918.45	

## Black Box Test Plan Control Structures

Test ID	Description	Expected Results	Actual Results																
Mid-range overtime hours, No insurance, Level 2	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Hilda Henderson</b> Employee Level: <b>2</b> Hours Worked: <b>50</b> Medical Insurance (Y/N): <b>N</b> Dental Insurance (Y/N): <b>N</b> Vision Insurance (Y/N): <b>N</b>	<table border="1"> <thead> <tr> <th>Name</th> <th>Hours</th> <th>PayRate</th> <th>Regular</th> <th>OT</th> <th>Gross</th> <th>Deduc.</th> <th>Net</th> </tr> </thead> <tbody> <tr> <td>Hilda Henderson</td> <td>50.00</td> <td>22.50</td> <td>900.00</td> <td>337.50</td> <td>1237.50</td> <td>0.00</td> <td>1237.50</td> </tr> </tbody> </table>	Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net	Hilda Henderson	50.00	22.50	900.00	337.50	1237.50	0.00	1237.50	
Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net												
Hilda Henderson	50.00	22.50	900.00	337.50	1237.50	0.00	1237.50												
Boundary regular hours, All insurances, Level 3, Boundary retirement	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Alice Anderson</b> Employee Level: <b>3</b> Hours Worked: <b>0</b> Medical Insurance (Y/N): <b>Y</b> Dental Insurance (Y/N): <b>Y</b> Vision Insurance (Y/N): <b>Y</b> Retirement Percentage (0-6): <b>0</b>	<Error Message>																	
Boundary regular hours, Two insurances, Level 3, Boundary retirement	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Bob Baker</b> Employee Level: <b>3</b> Hours Worked: <b>1</b> Medical Insurance (Y/N): <b>N</b> Dental Insurance (Y/N): <b>Y</b> Vision Insurance (Y/N): <b>Y</b> Retirement Percentage (0-6): <b>1</b>	<table border="1"> <thead> <tr> <th>Name</th> <th>Hours</th> <th>PayRate</th> <th>Regular</th> <th>OT</th> <th>Gross</th> <th>Deduc.</th> <th>Net</th> </tr> </thead> <tbody> <tr> <td>Bob Baker</td> <td>1.00</td> <td>25.75</td> <td>25.75</td> <td>0.00</td> <td>25.75</td> <td>20.80</td> <td>4.95</td> </tr> </tbody> </table>	Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net	Bob Baker	1.00	25.75	25.75	0.00	25.75	20.80	4.95	
Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net												
Bob Baker	1.00	25.75	25.75	0.00	25.75	20.80	4.95												
Mid-range regular hours, Two insurances, Level 3, Boundary retirement	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Carol Cole</b> Employee Level: <b>3</b> Hours Worked: <b>10</b> Medical Insurance (Y/N): <b>Y</b> Dental Insurance (Y/N): <b>N</b> Vision Insurance (Y/N): <b>Y</b> Retirement Percentage (0-6): <b>1</b>	<table border="1"> <thead> <tr> <th>Name</th> <th>Hours</th> <th>PayRate</th> <th>Regular</th> <th>OT</th> <th>Gross</th> <th>Deduc.</th> <th>Net</th> </tr> </thead> <tbody> <tr> <td>Carol Cole</td> <td>10.00</td> <td>25.75</td> <td>257.50</td> <td>0.00</td> <td>257.50</td> <td>32.32</td> <td>225.18</td> </tr> </tbody> </table>	Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net	Carol Cole	10.00	25.75	257.50	0.00	257.50	32.32	225.18	
Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net												
Carol Cole	10.00	25.75	257.50	0.00	257.50	32.32	225.18												

## Black Box Test Plan Control Structures

Test ID	Description	Expected Results								Actual Results
Mid-range regular hours, Two insurances, Level 3, Mid-range retirement	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Danny D David</b> Employee Level: <b>3</b> Hours Worked: <b>20</b> Medical Insurance (Y/N): <b>Y</b> Dental Insurance (Y/N): <b>Y</b> Vision Insurance (Y/N): <b>N</b> Retirement Percentage (0-6): <b>4</b>	Name Danny D David	Hours 20.00	PayRate 25.75	Regular 515.00	OT 0.00	Gross 515.00	Deduc. 60.40	Net 454.60	
Boundary regular hours, One insurance, Level 3, Boundary retirement	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Ellen Edwards</b> Employee Level: <b>3</b> Hours Worked: <b>39</b> Medical Insurance (Y/N): <b>N</b> Dental Insurance (Y/N): <b>N</b> Vision Insurance (Y/N): <b>Y</b> Retirement Percentage (0-6): <b>5</b>	Name Ellen Edwards	Hours 39.00	PayRate 25.75	Regular 1004.25	OT 0.00	Gross 1004.25	Deduc. 55.46	Net 948.79	
Boundary regular hours, One insurance, Level 3, Boundary retirement	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Frank Frankenstein</b> Employee Level: <b>3</b> Hours Worked: <b>40</b> Medical Insurance (Y/N): <b>Y</b> Dental Insurance (Y/N): <b>N</b> Vision Insurance (Y/N): <b>N</b> Retirement Percentage (0-6): <b>6</b>	Name Frank Frankenstein	Hours 40.00	PayRate 25.75	Regular 1030.00	OT 0.00	Gross 1030.00	Deduc. 86.30	Net 943.70	
Boundary overtime hours, One insurance, Level 3, Mid-range retirement	<b>Preconditions:</b> Paycheck program started Employee Name: <b>George George</b> Employee Level: <b>3</b> Hours Worked: <b>41</b> Medical Insurance (Y/N): <b>N</b> Dental Insurance (Y/N): <b>Y</b> Vision Insurance (Y/N): <b>N</b> Retirement Percentage (0-6): <b>2</b>	Name George George	Hours 41.00	PayRate 25.75	Regular 1030.00	OT 38.62	Gross 1068.62	Deduc. 36.67	Net 1031.95	

## Black Box Test Plan Control Structures

Test ID	Description	Expected Results	Actual Results																
Mid-range overtime hours, No insurance, Level 3, Mid-range retirement	<b>Preconditions:</b> Paycheck program started Employee Name: <b>Hilda Henderson</b> Employee Level: <b>3</b> Hours Worked: <b>50</b> Medical Insurance (Y/N): <b>N</b> Dental Insurance (Y/N): <b>N</b> Vision Insurance (Y/N): <b>N</b> Retirement Percentage (0-6): <b>3</b>	<table border="1"> <thead> <tr> <th data-bbox="604 250 905 272">Name</th> <th data-bbox="905 250 1010 272">Hours</th> <th data-bbox="1010 250 1136 272">PayRate</th> <th data-bbox="1136 250 1262 272">Regular</th> <th data-bbox="1262 250 1388 272">OT</th> <th data-bbox="1388 250 1514 272">Gross</th> <th data-bbox="1514 250 1640 272">Deduc.</th> <th data-bbox="1640 250 1751 272">Net</th> </tr> </thead> <tbody> <tr> <td data-bbox="604 272 905 295">Hilda Henderson</td> <td data-bbox="905 272 1010 295">50.00</td> <td data-bbox="1010 272 1136 295">25.75</td> <td data-bbox="1136 272 1262 295">1030.00</td> <td data-bbox="1262 272 1388 295">386.20</td> <td data-bbox="1388 272 1514 295">1416.20</td> <td data-bbox="1514 272 1640 295">42.48</td> <td data-bbox="1640 272 1751 295">1373.72</td> </tr> </tbody> </table>	Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net	Hilda Henderson	50.00	25.75	1030.00	386.20	1416.20	42.48	1373.72	
Name	Hours	PayRate	Regular	OT	Gross	Deduc.	Net												
Hilda Henderson	50.00	25.75	1030.00	386.20	1416.20	42.48	1373.72												