

AP Computer Science



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Homework : Roach Population Ver 3.14159

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Implement a class RoachPopulation that simulates the growth of a roach population. The constructor takes the size of the initial roach population. The wait method simulates a period in which the population doubles. The spray method simulates spraying with insecticide, which reduces the population according to a certain percentage. The getRoaches method returns the current number of roaches. The toString method displays the roaches according to a graphical (console) format below.

The RoachTester class should create a RoachPopulation object and use a menu to display and manipulate the object.

Your Roach Population should;

Allow the tester class to pass in an initial population size

Have a waitTime() method that will double the population of roaches

Have a spray method that will;

kill between 10-50% of the roaches the first time.

Each subsequent call will kill by a reduction of 2% (out of 100 for Jerry Qu) NOTE: Can be 0 but NOT negative.

For example, a population of 100.

spray(), 1st time generates kill ratio between 10% and 50% inclusive (41 values or can use continuous real numbers to span the 41 values)

Let's say it generates 21% to kill

$$100 * .21 = 21 \text{ so } 21 \text{ die.}$$

I would like this **returned** from the spray method

Round up for .5 or over on kills.

**Example, 79 population * .26 percent kills = 20.54
so 21 roaches are killed**

Round down if less than .5

A toSring method that **returns** a String that has one @ for each roach.

There should only by 20 per line, EVERY 100 ROACHES TRO IN A DIVIDING LINE
CONSISTING OF DASHES

NOTE: NO DASHES FOR ONLY 100 ROACHES!!!

Example for 204

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Use “\n” to append to the String

You need a Tester class

It should ;

have a main and a Scanner

Ask the user for the number of initial population

Then give a menu where you;

display the number of roaches numerically and graphically

ask them to

1. wait
2. spray
3. end

Here is an example run through

run:

Welcome to the Roach Population Simulation

How many roaches to start?

100

Current Population -> 100

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0 = Secret Zach Yoshikawa Menu!

1 = Wait(doubles pop)

2 = Spray (attempts to kill)

3 = Get me out of here, this is gross!!

1

Current Population -> 200

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0 = Secret Zach Yoshikawa Menu!

1 = Wait(doubles pop)

2 = Spray (attempts to kill)

3 = Get me out of here, this is gross!!

2

--->Kill Percent from 10 to 50<---

%% KP Selected = 20.0% out of 200:Population

**** 40 killed ****

Current Population -> 160

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0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2

--->Kill Percent from 8 to 48<---
%% KP Selected = 28.0% out of 160:Population

**** 45 killed *****

Current Population -> 115

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0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

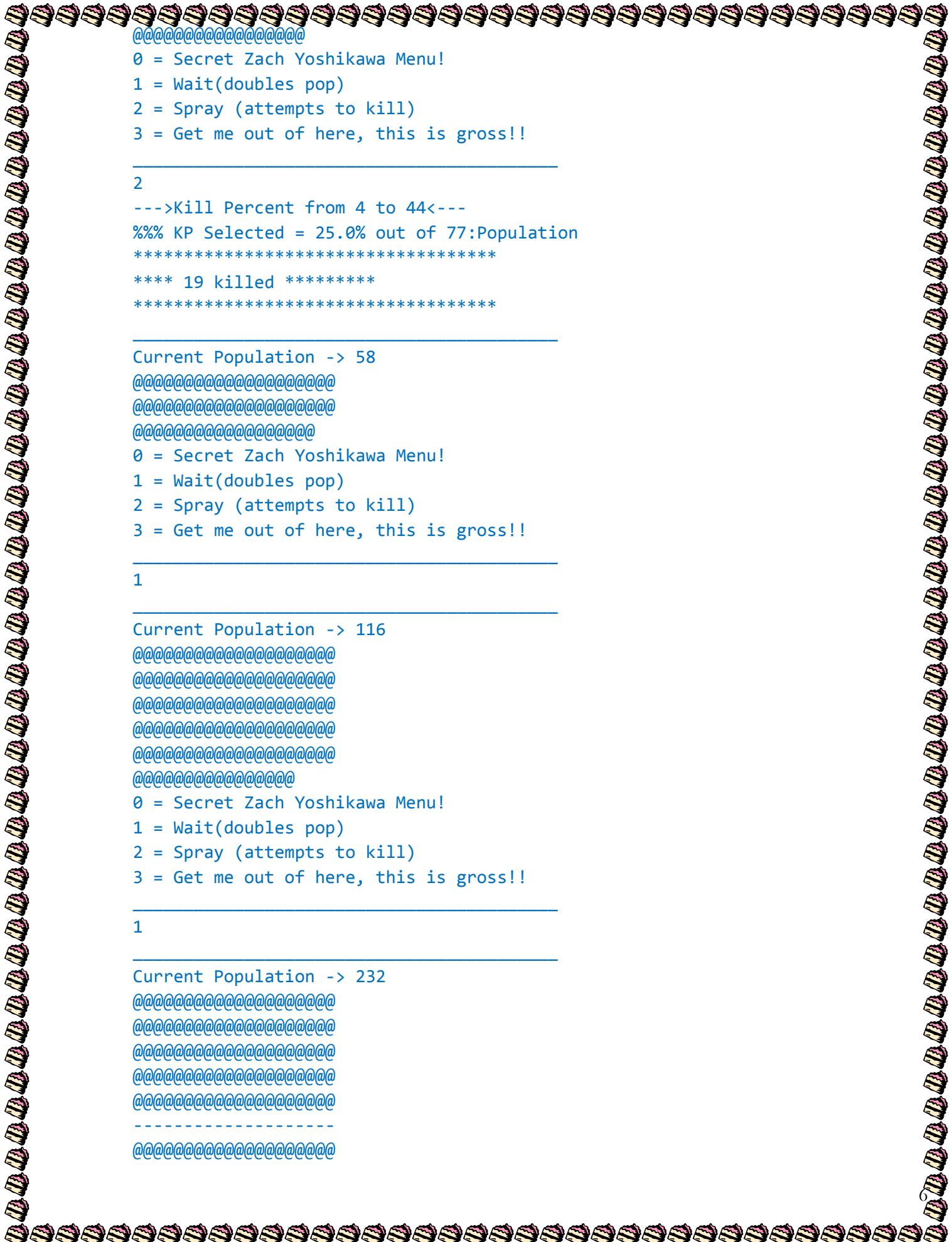
2

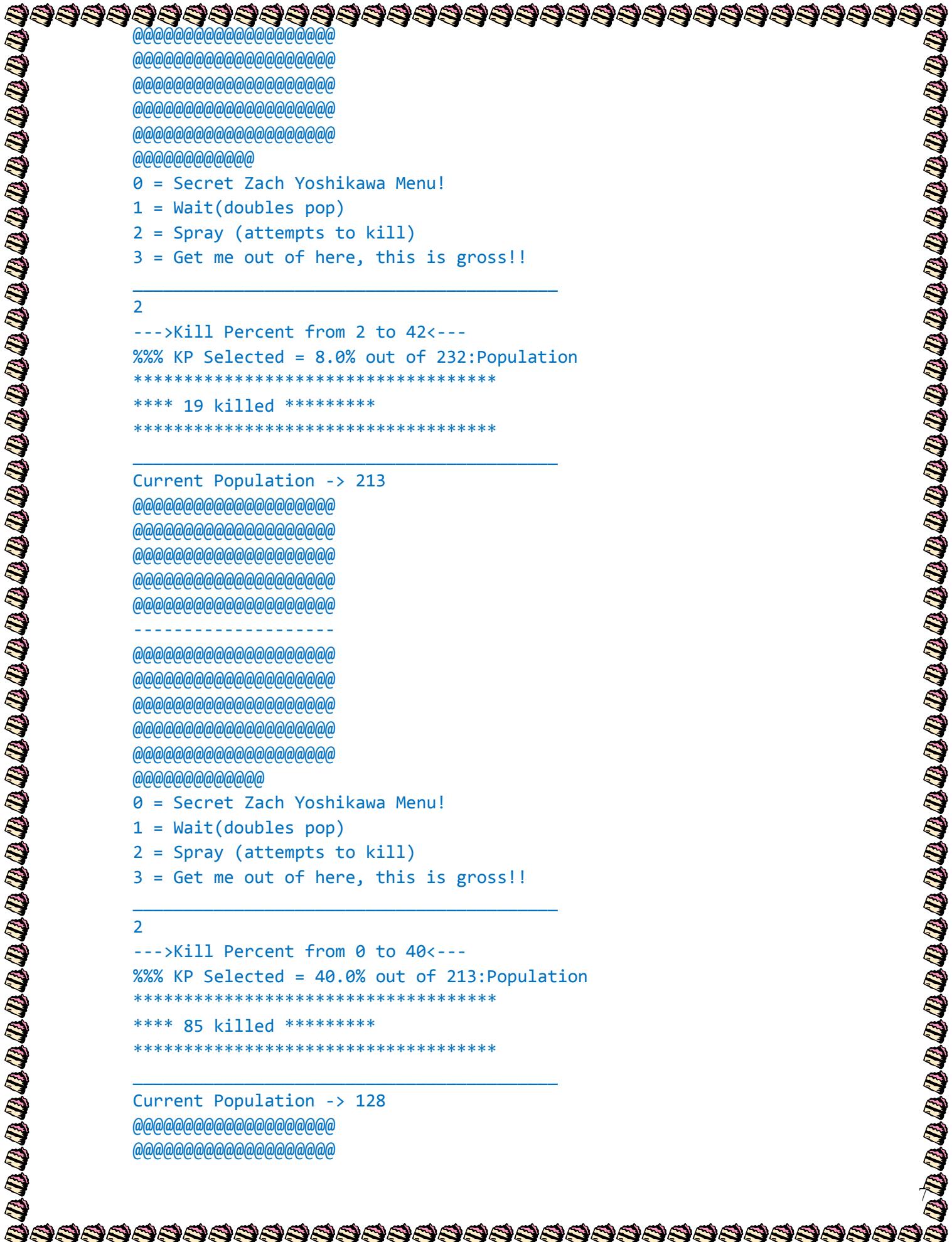
--->Kill Percent from 6 to 46<---
%% KP Selected = 33.0% out of 115:Population

**** 38 killed *****

Current Population -> 77

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0 = Secret Zach Yoshikawa Menu!

1 = Wait(doubles pop)

2 = Spray (attempts to kill)

3 = Get me out of here, this is gross!!

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--->Kill Percent from 0 to 38<---

%% KP Selected = 27.0% out of 128:Population

**** 35 killed *****

Current Population -> 93

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0 = Secret Zach Yoshikawa Menu!

1 = Wait(doubles pop)

2 = Spray (attempts to kill)

3 = Get me out of here, this is gross!!

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--->Kill Percent from 0 to 36<---

%% KP Selected = 5.0% out of 93:Population

**** 5 killed *****

Current Population -> 88

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0 = Secret Zach Yoshikawa Menu!

1 = Wait(doubles pop)

2 = Spray (attempts to kill)

3 = Get me out of here, this is gross!!

2

--->Kill Percent from 0 to 34<---
%% KP Selected = 23.0% out of 88:Population

**** 20 killed *****

Current Population -> 68

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0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2

--->Kill Percent from 0 to 32<---
%% KP Selected = 2.0% out of 68:Population

**** 1 killed *****

Current Population -> 67

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0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2

--->Kill Percent from 0 to 30<---
%% KP Selected = 25.0% out of 67:Population

**** 17 killed *****

Current Population -> 50

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0 = Secret Zach Yoshikawa Menu!

1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2
--->Kill Percent from 0 to 28<---
%% KP Selected = 8.0% out of 50:Population

**** 4 killed *****

Current Population -> 46

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0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2
--->Kill Percent from 0 to 26<---
%% KP Selected = 19.0% out of 46:Population

**** 9 killed *****

Current Population -> 37

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0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2
--->Kill Percent from 0 to 24<---
%% KP Selected = 19.0% out of 37:Population

**** 7 killed *****

Current Population -> 30

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0 = Secret Zach Yoshikawa Menu!

1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2
--->Kill Percent from 0 to 22<---
%% KP Selected = 22.0% out of 30:Population

**** 7 killed *****

Current Population -> 23

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1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

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Yoshikawasaki can get a cookie xD
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numbers part 6

Mr. Yoshikawasaki does not really welcome

However you may use it if Mr.

Type 1 for Part 1

Type 2 for Part 2

Type 3 for 500 Asterisks

Type 4 for number to asterisks

Type 5 for odd numbers

Type 6 for average of

10

Type 7 for dispAuthor() method
Type 8 for random sound player
Type 9 for probability dice

roll

Current Population -> 23

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0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2

--->Kill Percent from 0 to 20<---
%% KP Selected = 3.0% out of 23:Population

**** 1 killed *****

Current Population -> 22

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0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2

--->Kill Percent from 0 to 18<---
%% KP Selected = 3.0% out of 22:Population

**** 1 killed *****

Current Population -> 21

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0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2

--->Kill Percent from 0 to 16<---
%% KP Selected = 12.0% out of 21:Population

**** 3 killed *****

Current Population -> 18

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0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)

2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2
--->Kill Percent from 0 to 14<---
%% KP Selected = 13.0% out of 18:Population

**** 2 killed *****

Current Population -> 16
@@@@@@@
0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2
--->Kill Percent from 0 to 12<---
%% KP Selected = 2.0% out of 16:Population

**** 0 killed *****

Current Population -> 16
@@@@@@@
0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2
--->Kill Percent from 0 to 10<---
%% KP Selected = 10.0% out of 16:Population

**** 2 killed *****

Current Population -> 14
@@@@@@@
0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2

--->Kill Percent from 0 to 8<---
%% KP Selected = 8.0% out of 14:Population

**** 1 killed *****

Current Population -> 13
@@@@@@@
0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2
--->Kill Percent from 0 to 6<---
%% KP Selected = 2.0% out of 13:Population

**** 0 killed *****

Current Population -> 13
@@@@@@@
0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2
--->Kill Percent from 0 to 4<---
%% KP Selected = 3.0% out of 13:Population

**** 0 killed *****

Current Population -> 13
@@@@@@@
0 = Secret Zach Yoshikawa Menu!
1 = Wait(doubles pop)
2 = Spray (attempts to kill)
3 = Get me out of here, this is gross!!

2
--->Kill Percent from 0 to 2<---
%% KP Selected = 1.0% out of 13:Population

**** 0 killed *****

Current Population -> 13

@@@@ @@@@ @@@@ @@@@

0 = Secret Zach Yoshikawa Menu!

1 = Wait(doubles pop)

2 = Spray (attempts to kill)

3 = Get me out of here, this is gross!!

2

--->Kill Percent from 0 to 0<---

%%% KP Selected = 0.0% out of 13:Population

**** 0 killed *****

Current Population -> 13

@@@@ @@@@ @@@@ @@@@

0 = Secret Zach Yoshikawa Menu!

1 = Wait(doubles pop)

2 = Spray (attempts to kill)

3 = Get me out of here, this is gross!!

2

**** 0 killed *****

Current Population -> 13

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0 = Secret Zach Yoshikawa Menu!

1 = Wait(doubles pop)

2 = Spray (attempts to kill)

3 = Get me out of here, this is gross!!

2

**** 0 killed *****

Current Population -> 13

@@@@ @@@@ @@@@ @@@@

0 = Secret Zach Yoshikawa Menu!

1 = Wait(doubles pop)

2 = Spray (attempts to kill)

3 = Get me out of here, this is gross!!

Project Name	HW Roach Population
Class 1 Name	RoachPopulation
Class 2 Name	RoachTester

Rubric	
Constructor	5
Wait	5
Spray	20
Random range appropriate	10
toString	10
TOTAL	50

*Recursion*Linear Search*Binary Search*Grid World Case Study*File Processing *nlogn*Hangman*