

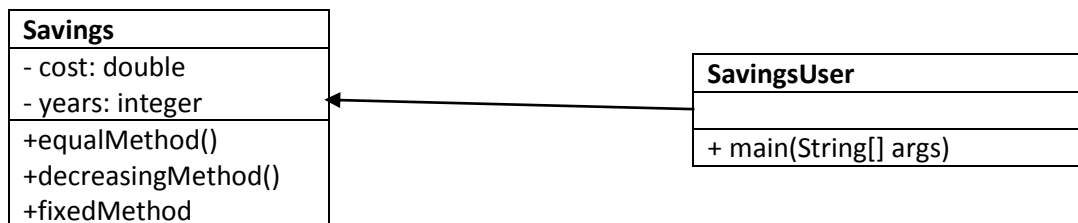
Savings

Analysis

The savings program will get a user to enter the cost of a car and how many years they want to save for it. It will then work out how much it they will have to save each year using one of three methods, equal amount, fixed amount and decreasing amounts.

Design

There will be two classes, Savings and SavingsUser. SavingsUser will read in the cost of the car and the years they want to save. These values are then passed to Savings which will calculate the three different ways of saving that amount over the set amount of years. Those results will then be outputted by the SavingsUser class.



Pseudo Code

Public class SavingsUser

Main = string args

Create new savings object

Create new scanner

Set numbers of years value

Get cost of car

Start If

value less than 0 output error message

end if

start else

get number of years

end else

```
        start if
            years value not between 1 and 10 out error
        end if
        start else
            create new savings class
            state value of car and years to save
            output the equal method
            output the decreasing method
            output the fixed method
        end else
    end
```

Public class Savings

Create constructor

Method = equalMethod

Amount = cost/years

Start for

Saved = currentYear*amount

Remaining = cost-saved

Output year, saved and remaining

End for

End

Method = decreasingMethod

Set remaining value

Set total value

sumOfYears= (years^2+years)/2

start for

amount = (((years-x)+1)/sumOfYears)*cost

remaining = remaining – amount

```

        total = total+amount

        output x, amount, total and remaining

    end for

end

Method = fixedMethod

    Set remaining value

    Set total value

    Start for

        Amount = (2/years)*remaining

        Total = total+amount

        Remaining = remaining – amount

        Output x, amount, total and remaining

    End for

End

End

```

Testing

Test	Expected	Actual
Cost of the car is 9000 and the years saving is 5	Equal: 1800 saved year 1 and 7200 left, 3600 saved year 2 and 5400 left, 5400 saved year 3 and 3600 left, 7200 saved year 4 and 1800 left, 9000 saved year 5 and 0 left	<pre> The original cost of the car is:9000.0 and the number of years is:5 Using the equal amount method: The amount saved in year 1, is 1800.00, and the remaining amount is, 7200.00 The amount saved in year 2, is 3600.00, and the remaining amount is, 5400.00 The amount saved in year 3, is 5400.00, and the remaining amount is, 3600.00 The amount saved in year 4, is 7200.00, and the remaining amount is, 1800.00 The amount saved in year 5, is 9000.00, and the remaining amount is, 0.00 </pre>

	Decreasing: 3000 saved in year 1 and 6000 remaining, 5400 saved and 3600 remaining, 7200 saved and 1800 remaining, 8400 saved and 600 remaining, 9000 saved and 0 remaining	<p>Using the decreasing amount method:</p> <p>The amount saved in year 1 is 3000.00, the total saved is 3000.00, and the remaining amount is 6000.00</p> <p>The amount saved in year 2 is 2400.00, the total saved is 5400.00, and the remaining amount is 3600.00</p> <p>The amount saved in year 3 is 1800.00, the total saved is 7200.00, and the remaining amount is 1800.00</p> <p>The amount saved in year 4 is 1200.00, the total saved is 8400.00, and the remaining amount is 600.00</p> <p>The amount saved in year 5 is 600.00, the total saved is 9000.00, and the remaining amount is 0.00</p>
	Fixed: 3600 saved and 5400 remaining, 5760 saved and 3240 remaining, 7056 saved and 1944 remaining, 7833.60 saved and 1166.40 remaining, 8300.16 saved and 699.84 remaining	<p>Using the fixed amount method:</p> <p>The amount saved in year 1 is 3600.00, the total saved is 3600.00 and the remaining amount is 5400.00</p> <p>The amount saved in year 2 is 2160.00, the total saved is 5760.00 and the remaining amount is 3240.00</p> <p>The amount saved in year 3 is 1296.00, the total saved is 7056.00 and the remaining amount is 1944.00</p> <p>The amount saved in year 4 is 777.60, the total saved is 7833.60 and the remaining amount is 1166.40</p> <p>The amount saved in year 5 is 466.56, the total saved is 8300.16 and the remaining amount is 699.84</p>
Value of car is 0	Error appears	<pre>C:\Users\Jack\Documents\YEAR1\COMP101\Assessment5>java SavingsUser Please the cost of the car: 0 Invalid value, please try again</pre>
Value of the car is below 0	Error appears	<pre>C:\Users\Jack\Documents\YEAR1\COMP101\Assessment5>java SavingsUser Please the cost of the car: -1 Invalid value, please try again</pre>
Number of years is below 1	An error appears	<pre>C:\Users\Jack\Documents\YEAR1\COMP101\Assessment5>java SavingsUser Please the cost of the car: 9000 Please input number of years you would to save: 0 Invalid value, please try again</pre>
Number of years is negative	An error appears	<pre>Please the cost of the car: 400 Please input number of years you would to save: -4 Invalid value, please try again</pre>

Number of years is 1	Equal: 9000 saved and 0 remaining	<pre> The original cost of the car is: 9000.0 and the number of years is: 1 Using the equal amount method: The amount saved in year 1, is 9000.00, and the remaining amount is, 0.00 </pre>
	Decreasing: 9000 saved and 0 remaining	<pre> Using the decreasing amount method: The amount saved in year 1 is 9000.00, the total saved is 9000.00, and the remaining amount is 0.00 </pre>
	Fixed: 9000 saved and 0 remaining	<pre> Using the fixed amount method: The amount saved in year 1 is 18000.00, the total saved is 18000.00 and the remaining amount is -9000.00 </pre>
Number of years is above 10	An error will appear	<pre> C:\Users\Jack\Documents\YEAR1\COMP101\Assessment5>java SavingsUser Please the cost of the car: 9000 Please input number of years you would to save: 11 Invalid value, please try again </pre>