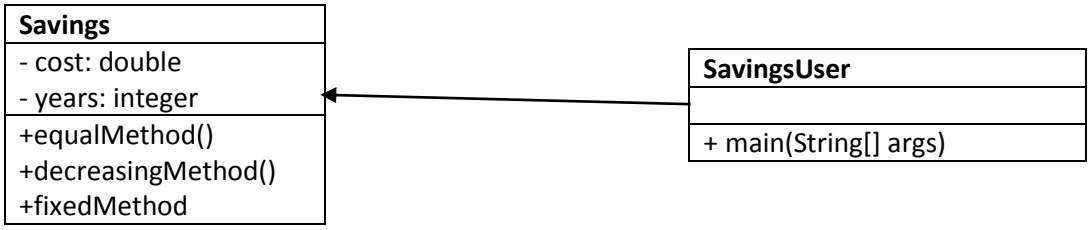
Savings

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 SavingUser. SavingUser 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 SavingUser 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

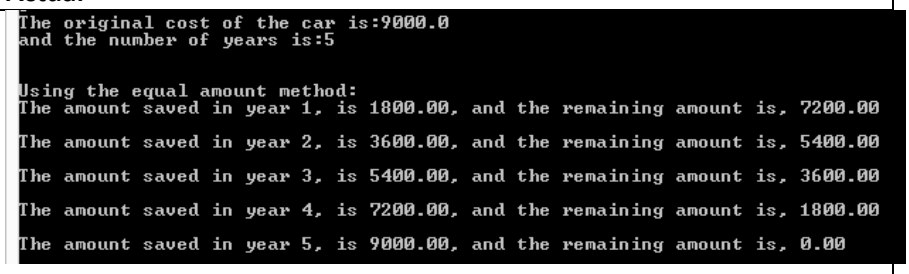
get number of years

end else

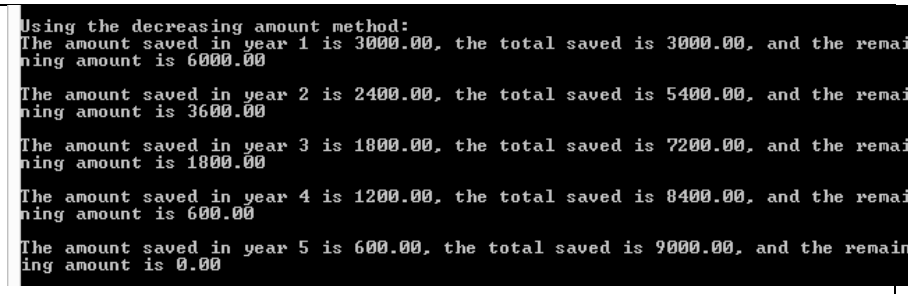
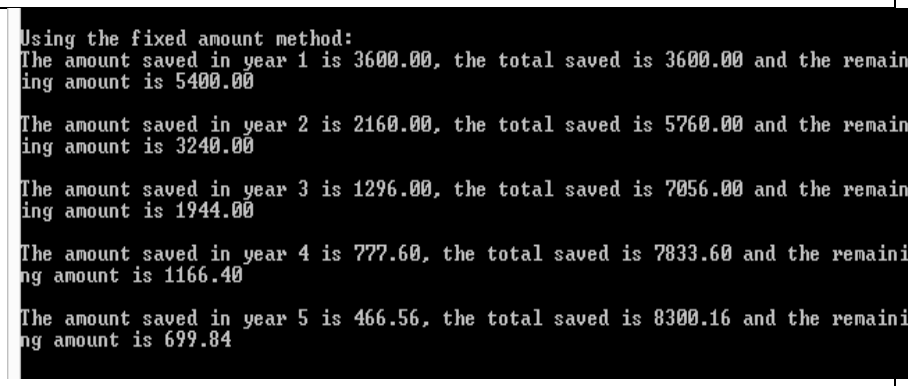
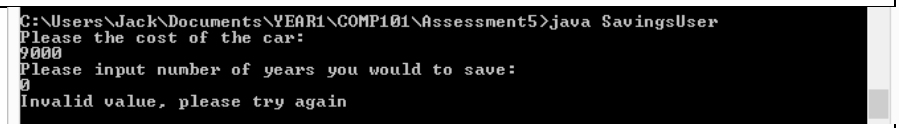
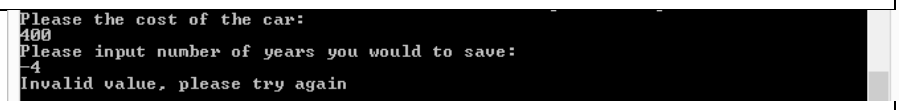
```
            start if
                years value not between 1 and 10 out error
            end if
            start else
                create new savings class
                state value of car and years to save
                output the equal method
                output the decreasing method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

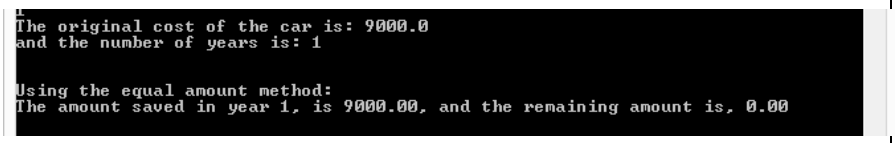
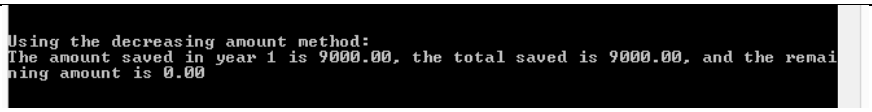
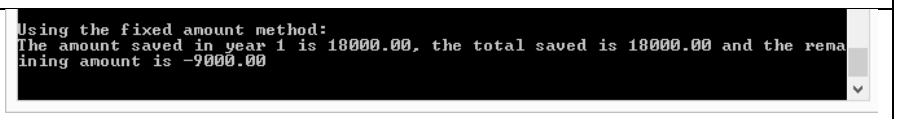
```
                total = total+amount
                output x, amount, total and remaining
            end for
        end


        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	

```
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
```

	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	
	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	
Value of car is 0	Error appears	
Value of the car is below 0	Error appears	
Number of years is below 1	An error appears	
Number of years is negative	An error appears	

Number of years is 1	Equal: 9000 saved and 0 remaining	
	Decreasing: 9000 saved and 0 remaining	
	Fixed: 9000 saved and 0 remaining	
Number of years is above 10	An error will appear