

SdPd/java Lab Exam 4

Insurance, Investment Guaranteed, Unit Linked and Term Unit Linked Policies

Corrib Insurances sell a variety of policies. Design an OO inheritance based class structure to model a collection of Insurance, Investment Guaranteed, Unit Linked & Term Unit Linked policies.

1. **Download** the lab exam 4 starter **zip** file and extract the folder, **Save** on the desktop (**not** your Network account, local C drive or USB)
 - Rename the **SurnameFirstNameLabEx4** folder as per your own name
E.g. **AgnewGerryLabEx4** folder
 - Rename the **SurnameFirstNameLabEx4Test** test/driver classes as per your own name
E.g. **AgnewGerryLabEx4Test1, 2 and 3**
 - To be **verified** by your lab supervisor
2. Examine/verify the existing empty/partial class files provided to be coded/implemented
 - Add your **Program Id, Name** and **Description** as **comments** at the top of each class
 - Enable Inheritance for the designated Sub classes listed below
3. **Warning:** Marks will be deducted for **poor programming practices** such as:
 - Lacking meaningful variable names, white-space, indentation, etc.
 - Ensure redundant code is deleted prior to program submission
 - Untested code - ensure that all constructors/methods are called/exercised at least once
4. **Person** class (embedded as an inner class):

private Member Variables	firstName (String) dateOfBirth (int) - yymmdd	lastName (String)
Member Methods	Default Constructor	All Parameter Constructor
	setPerson	toString
	setFirstName	getFirstName
	setLastName	getLastName
	setDateOfBirth	getDateOfBirth
– setPerson () only changes existing Person object details		

5. **InsurancePolicy** super class with inner **Person** class instance:

private Member Variables	insPolicyNo (int) insPremium (double) insPolicyName (Person)	insCommenceDate (int) - yymmdd insAlive (boolean)
Member Methods	Default Constructor	All Parameter Constructor
	setInsurancePolicy	toString
	setInsPolicyNo	getInsPolicyNo
	setInsCommenceDate	getInsCommenceDate
	setInsPremium setInsPremium (int)	getInsPremium
	setInsAlive	getInsAlive
	setInsPolicyName	getInsPolicyName
	– setInsurancePolicy () only changes existing Insurance Policy object details (excluding Person object details)	
– Overloaded setInsPremium (int) increases the premium by the integer percent amount provided e.g. 30%		

6. Sub class **InvestmentGuaranteed** inherits/is derived from the Super class **InsurancePolicy**:

private Mem Var	igLumpSum (double)	igMatureDate (int) - yymmdd
Member Methods	Default Constructor	All Parameter Constructor
	setInvestmentGuaranteed	toString
	setIgLumpSum setIgLumpSum (int)	getIgLumpSum
	setIgMatureDate	getIgMatureDate
– setInvestmentGuaranteed () only changes existing Investment Guaranteed objects – Overloaded setIgLumpSum (int) decreases the lump sum by the integer expenses amount provided e.g. €35		

7. Sub class **UnitLinked** inherits or is derived from the Super class **InsurancePolicy**:

private Mem Var	DEFAULT_FUND (int) = 10	ulFund (int)
Member Methods	Default Constructor	All Parameter Constructor
		toString
	setUIFund	getUIFund
– Default ulFund is 10 if not provided and should be defined as a static class constant		

8. Sub class **TermUnitLinked** inherits or is derived from the Super class **UnitLinked** (not the **InsurancePolicy** class) with another inner **Person** class instance:

private Mem Var	tulMatureDate (int)- yymmdd	tulLifeInsuredName (Person)
Member Methods	Default Constructor	All Parameter Constructor Intermediate Constructor: not life insured
		toString
	setTulMatureDate	getTulMatureDate
	setTulLifeInsuredName	getTulLifeInsuredName
– Intermediate constructor accepts all parameters excluding the life insured name		

9. **SurnameFirstNameLabEx4Test1 driver class (without an object array):**

- Code a test/driver class that creates 2 or 3 simple object instances of each of the above classes (without an object array) using the sample data provided
- Which calls both default and parameter descriptors and the associated setInsurancePolicy/ setPerson, etc. methods as appropriate to update the default/blank objects
- Output the associated toString () and other methods required to verify the object contents
- Match the attached page 4 **Screenshot 1** output

10. **SurnameFirstNameLabEx4Test2 driver class (with an object array):**

- Declare an object array of mixed Insurance Policy, Investment Guaranteed, Unit Linked and Term Unit Linked insurance object instances using the same sample data created in Test 1
- Within a **for loop** output the object array contents using toString () method for each policy
- Interrogate each object and show the class name abbreviation prefix before each line output
- Match the attached page 4 **Screenshot 2** output

11. **SurnameFirstNameLabEx4Test3 driver class (with an object array and menu):**

- Declare an object array of mixed Insurance Policy, Investment Guaranteed, Unit Linked and Term Unit Linked insurance object instances using the same sample data created in Test 2
- Display the Corrib Insurances Menu (code provided) – see page 4 **Screenshot 3**
- Code user defined methods for each of the menu options rather than a big switch statement
- Then call selected methods as required from the while loop/switch statement provided

12. **List All Insurance policies** (menu option 1/see page 4 **Screenshot 4**)
 - List details for all Insurance objects prefixed by the class abbreviation (same as Test 2)
13. **List Investment Guaranteed policies** (menu option 2/see page 5 **Screenshot 5**)
 - List details for all Investment Guaranteed objects prefixed by the class abbreviation
14. **List Unit Linked policies** (menu option 3/see page 5 **Screenshot 6**)
 - List details for ordinary Unit Linked objects prefixed by the class abbreviation
15. **List Term Unit Linked policies** (menu option 4/see page 5 **Screenshot 7**)
 - List details for all Term Unit Linked objects prefixed by the class abbreviation
16. **List All Unit Linked policies** (menu option 5/see page 5 **Screenshot 8**)
 - List details for **all** Unit Linked objects prefixed by the class abbreviation
17. **List ordinary Insurance policies Only** (menu option 6/see page 5 **Screenshot 9**)
 - i.e. qualifying ordinary Insurance Policies (**not** Investment Guaranteed/Unit Linked objects)
18. **Increase Insurance Premiums** (menu option 7/see page 5 **Screenshot 10**)
 - Prompt/input a Premium increase integer percentage
 - Increase **all** policy object premium amounts by the percentage specified
 - Showing both the before and after (toString) object contents (i.e. before/after Premiums)
19. **Change Unit Linked Fund** (menu option 8/see page 6 **Screenshot 11**)
 - Prompt/input both the old/existing and the new fund integer numbers
 - Replace all existing Unit Linked fund numbers with the new fund number provided
 - Showing both the before and after (toString) object contents (i.e. before/after Fund numbers)
 - With a footer count of the number of Fund occurrences replaced
20. **Change Unit Linked Policy Premium** (menu option 9/see page 6 **Screenshot 12**)
 - Prompt/Input a policy number and search for that Policy using a while loop
 - Prompt/Input/Apply the new Premium (double) or Premium increase percentage (int)
 - Showing both the before and after (toString) object contents (i.e. before/after Premiums)
 - Otherwise, display: Policy number not found – try again error message
 - Otherwise, display: Not a Unit Linked policy – try again error message
21. **Change Investment Guaranteed Lump Sum** (menu option 10/see page 6 **Screenshot 13**)
 - Prompt/Input a policy number and search for that Policy using a while loop
 - Prompt/Input/Apply the new Investment Lump Sum increase percentage (double)
 - Showing both the before and after (toString) object contents (i.e. before/after Lump Sum)
 - Otherwise, display: Policy number not found – try again error message
 - Otherwise, display: Not an Investment Guaranteed policy – try again error message
22. **Change the Insured Name** (menu option 11/see page 6 **Screenshot 14**)
 - Prompt/Input a policy number and search for that Policy using a while loop
 - Prompt/Input/Apply the new insured first and last names
 - Showing both the before and after (toString) object contents (i.e. before/after Insured names)
 - Otherwise, display: Policy number not found – try again error message
23. **The End:** when finished Save and Exit TextPad
 - Zip (R/click: Send Compressed) your **SurnameFirstNameLabEx4** folder
 - Upload your **SurnameFirstNameLabEx4** zip file to the Moodle link provided
 - Save a backup copy of the **SurnameFirstNameLabEx4** folder to your root network account

Test Insurance Policies 1 Screenshot 1

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Ref Policy Comm Premium A Insured Name

```
=====
p1:          Person: noFirst noLast
p1:          Person: Pink Panther
p2:          Person: Woody Woodpecker

i1:          0 999999          0.00 F noFirst noLast
i1: 11111 110101 111.11 T Yogi Bear
i2: 22222 220101 22.22 F Micky Mouse

i2.setInsPremium(10)
i2: 22222 220101 24.44 F Micky Mouse

g1:          0 999999          0.00 F noFirst noLast Lum:          0.00 Mat: 999999
g1: 33333 330101 333.33 T Wile Coyote Lum: 200000.00 Mat: 250101
g2: 44444 440101 44.44 F Winnie ThePooh Lum: 100000.00 Mat: 201231

g2.setIgLumpSum(111)
g2: 44444 440101 44.44 F Winnie ThePooh Lum: 99889.00 Mat: 201231

u1:          0 999999          0.00 F noFirst noLast Fun: 10
u1: 55555 550101 5.55 T Daffy Duck Fun: 10
u2: 66666 660101 666.66 F Porky Pig Fun: 20

t1:          0 999999          0.00 F noFirst noLast Fun: 10 Lif: noFirst noLast 999999
t1: 77777 770101 77.77 T Betty Boop Fun: 20 Lif: Gerry Agnew 440101
t2: 88888 880101 8.88 F Tweety Bird Fun: 22 Lif: Mary Murphy 560101
t3: 99999 990101 9.99 F Bart Simpson Fun: 30 Lif: noFirst noLast 330101
t3: 99999 990101 9.99 F Bart Simpson Fun: 30 Lif: Paddy Reilly 330101
```

Test Insurance Policies 2 Screenshot 2

Gerry Agnew - Lab Exam 4 2016 Object Array

Ref Policy Comm Premium A Insurer Name

```
=====
Ord 11111 110101 111.11 T Yogi Bear
Ord 22222 220101 22.22 F Micky Mouse
IG 33333 330101 333.33 T Wile Coyote Lum: 200000.00 Mat: 250101
IG 44444 440101 44.44 F Winnie ThePooh Lum: 100000.00 Mat: 201231
UL 55555 550101 5.55 T Daffy Duck Fun: 10
UL 66666 660101 666.66 F Porky Pig Fun: 20
TUL 77777 770101 77.77 T Betty Boop Fun: 20 Lif: Gerry Agnew 440101
TUL 88888 880101 8.88 F Tweety Bird Fun: 22 Lif: Mary Murphy 560101
TUL 99999 990101 9.99 F Bart Simpson Fun: 30 Lif: Paddy Reilly 330101
```

Corrib Insurances Menu Screenshot 3

```
===== Corrib Insurances Menu Options =====
1: List All Insurance policies      2: List Investment Guaranteed policies
3: List Unit Linked policies       4: List Term Unit Linked policies
5: List All Unit Linked policies   6: List ordinary Insurance policies
7: Increase Insurance Premiums     8: Change Unit Linked Fund
9: Change the UL Policy Premium    10: Change Investment Guaranteed Lump Sum
11: Change the Insured Name        0: Quit
```

Menu Option 1: List All Insurance policies Screenshot 4

Enter option: 1

Ref Policy Comm Premium A Insurer Name

```
=====
Ord 11111 110101 111.11 T Yogi Bear
Ord 22222 220101 22.22 F Micky Mouse
IG 33333 330101 333.33 T Wile Coyote Lum: 200000.00 Mat: 250101
IG 44444 440101 44.44 F Winnie ThePooh Lum: 100000.00 Mat: 201231
UL 55555 550101 5.55 T Daffy Duck Fun: 10
UL 66666 660101 666.66 F Porky Pig Fun: 20
TUL 77777 770101 77.77 T Betty Boop Fun: 20 Lif: Gerry Agnew 440101
TUL 88888 880101 8.88 F Tweety Bird Fun: 22 Lif: Mary Murphy 560101
TUL 99999 990101 9.99 F Bart Simpson Fun: 30 Lif: Paddy Reilly 330101
```

Menu Option 2: List Investment Guaranteed policies Screenshot 5

Enter option: 2

Ref Policy Comm Premium A Insurer Name

```
=====
IG 33333 330101 333.33 T Wile Coyote Lum: 200000.00 Mat: 250101
IG 44444 440101 44.44 F Winnie ThePooh Lum: 100000.00 Mat: 201231
```

Menu Option 3: List Unit Linked policies Screenshot 6

Enter option: 3

Ref Policy Comm Premium A Insurer Name

```
=====
UL 55555 550101 5.55 T Daffy Duck Fun: 10
UL 66666 660101 666.66 F Porky Pig Fun: 20
```

Menu Option 4: List Term Unit Linked policies Screenshot 7

Enter option: 4

Ref Policy Comm Premium A Insurer Name

```
=====
TUL 77777 770101 77.77 T Betty Boop Fun: 20 Lif: Gerry Agnew 440101
TUL 88888 880101 8.88 F Tweety Bird Fun: 22 Lif: Mary Murphy 560101
TUL 99999 990101 9.99 F Bart Simpson Fun: 30 Lif: Paddy Reilly 330101
```

Menu Option 5: List All Unit Linked policies Screenshot 8

Enter option: 5

Ref Policy Comm Premium A Insurer Name

```
=====
UL 55555 550101 5.55 T Daffy Duck Fun: 10
UL 66666 660101 666.66 F Porky Pig Fun: 20
TUL 77777 770101 77.77 T Betty Boop Fun: 20 Lif: Gerry Agnew 440101
TUL 88888 880101 8.88 F Tweety Bird Fun: 22 Lif: Mary Murphy 560101
TUL 99999 990101 9.99 F Bart Simpson Fun: 30 Lif: Paddy Reilly 330101
```

Menu Option 6: List ordinary Insurance policies Screenshot 9

Enter option: 6

Ref Policy Comm Premium A Insurer Name

```
=====
Ord 11111 110101 111.11 T Yogi Bear
Ord 22222 220101 22.22 F Micky Mouse
```

Menu Option 7: Increase Insurance Premiums Screenshot 10

Enter option: 7

Enter Premium Increase %: 10

Ref Policy Comm Premium A Insurer Name

```
=====
Ord 11111 110101 111.11 T Yogi Bear
Ord 11111 110101 122.22 T Yogi Bear
Ord 22222 220101 22.22 F Micky Mouse
Ord 22222 220101 24.44 F Micky Mouse
IG 33333 330101 333.33 T Wile Coyote Lum: 200000.00 Mat: 250101
IG 33333 330101 366.66 T Wile Coyote Lum: 200000.00 Mat: 250101
IG 44444 440101 44.44 F Winnie ThePooh Lum: 100000.00 Mat: 201231
IG 44444 440101 48.88 F Winnie ThePooh Lum: 100000.00 Mat: 201231
UL 55555 550101 5.55 T Daffy Duck Fun: 10
UL 55555 550101 6.11 T Daffy Duck Fun: 10
UL 66666 660101 666.66 F Porky Pig Fun: 20
UL 66666 660101 733.33 F Porky Pig Fun: 20
TUL 77777 770101 77.77 T Betty Boop Fun: 20 Lif: Gerry Agnew 440101
TUL 77777 770101 85.55 T Betty Boop Fun: 20 Lif: Gerry Agnew 440101
TUL 88888 880101 8.88 F Tweety Bird Fun: 22 Lif: Mary Murphy 560101
TUL 88888 880101 9.77 F Tweety Bird Fun: 22 Lif: Mary Murphy 560101
TUL 99999 990101 9.99 F Bart Simpson Fun: 30 Lif: Paddy Reilly 330101
TUL 99999 990101 10.99 F Bart Simpson Fun: 30 Lif: Paddy Reilly 330101
```

9 policy premiums increased by 10%

Menu Option 8: Change Unit Linked Fund Screenshot 11

Enter option: 8

Enter Old & New UL Fund No: 20 55

Ref Policy	Comm	Premium	A	Insurer	Name
UL 55555	550101	5.55	T	Daffy Duck	Fun: 10
UL 66666	660101	666.66	F	Porky Pig	Fun: 20
UL 66666	660101	666.66	F	Porky Pig	Fun: 55
TUL 77777	770101	77.77	T	Betty Boop	Fun: 20 Lif: Gerry Agnew 440101
TUL 77777	770101	77.77	T	Betty Boop	Fun: 55 Lif: Gerry Agnew 440101
TUL 88888	880101	8.88	F	Tweety Bird	Fun: 22 Lif: Mary Murphy 560101
TUL 99999	990101	9.99	F	Bart Simpson	Fun: 30 Lif: Paddy Reilly 330101

2 existing UL fund: 20 changed to: 55

Menu Option 9: Change Unit Linked Policy Premium Screenshot 12

Enter option: 9

Enter Policy Number: 12345

Policy Number not found - try again

Enter Policy Number: 33333

Not a Unit Linked policy - try again

Enter Policy Number: 55555

Enter new Premium or Premium increase % (double & int): 555.55 0

Ref Policy	Comm	Premium	A	Insurer	Name
UL 55555	550101	5.55	T	Daffy Duck	Fun: 10
UL 55555	550101	555.55	T	Daffy Duck	Fun: 10

Enter Policy Number: 55555

Enter new Premium or Premium increase % (double & int): 0.00 10

Ref Policy	Comm	Premium	A	Insurer	Name
UL 55555	550101	5.55	T	Daffy Duck	Fun: 10
UL 55555	550101	6.11	T	Daffy Duck	Fun: 10

Enter new Premium or Premium increase % (double & int): 0.00 10

Menu Option 10: Change Investment Guaranteed Lump Sum Screenshot 13

Enter option: 10

Enter Policy Number: 12345

Policy Number not found - try again

Enter Policy Number: 11111

Not a Investment Guaranteed policy - try again

Enter Policy Number: 44444

Enter new Lump Sum increase %(dbl): 10

Ref Policy	Comm	Premium	A	Insurer	Name
IG 44444	440101	44.44	F	Winnie ThePooh	Lum: 100000.00 Mat: 201231
IG 44444	440101	44.44	F	Winnie ThePooh	Lum: 110000.00 Mat: 201231

Enter new Lump Sum increase %(dbl): 10

Menu Option 11: Change the Insurer Name Screenshot 14

Enter option: 11

Enter Policy Number: 12345

Policy Number not found - try again

Enter Policy Number: 99999

Enter new first & last Insurer names: Jojo Bloggs

Ref Policy	Comm	Premium	A	Insurer	Name
TUL 99999	990101	9.99	F	Bart Simpson	Fun: 30 Lif: Paddy Reilly 330101
TUL 99999	990101	9.99	F	Jojo Bloggs	Fun: 30 Lif: Paddy Reilly 330101

Enter new first & last Insurer names: Jojo Bloggs