UNATTENDED PROGRAMMING EXERCISE

Venture into house insurance (a completely contrived venture)

Scenario

The management has decided to venture into the house insurance market in the UK using (initially) very simple criteria. A software engineering team, developing the insurance offering, is working on the story from the product owner below.

Offer Indicative House Insurance Premiums:
As the head of house insurance sales I want to provide a means for customers from around the UK to be able to get an indicative premium to insure their house. The initial criteria that the customer will supply is very simple consisting of the postcode, number of bedrooms, and if the property has a thatched roof.

When the story was picked up and 'de-fuzzed,' the following further clarifications were made by the product owner:

- The base annual premium for a house with one bedroom is £110.00.
- The number of bedrooms has no effect on the premium currently. This is something that will be reviewed in the future
- A house with more than four bedrooms is not to be insured
- A house with no bedrooms should be treated as having one bedroom
- A house with a thatched roof is not to be insured

The head of insurance sales advised the team that a partnership with two third party companies will help to mitigate the risk due to flooding or subsidence. This means that:

- A house in a subsidence area is not to be insured
- A house with a high risk of flooding is not to be insured
- A house with a medium risk of flooding is to be charged 15% extra
- A house with any other risk has no effect on the premium currently

Included in the exercise pack

The following files are included in the `gr.hellasdirect.houseinsurance` package:

- `HouseInsuranceService.java`

The following files are included in the `uk.co.subsidencewatch` package:

- `SubsidenceAreaChecker.java`
- `SubsidenceAreaCheckerTechnicalFailureException.java`

The following files are included in the `uk.co.floodwatch` package:

- `FloodAreaChecker.java`
- `FloodAreaCheckerTechnicalFailureException.java`

- `FloodRisk.java`
- `PostcodeNotFoundException.java`

Instructions

Try and spend no more than two to three hours on this exercise.

- You are required to provide an implementation of the `HouseInsuranceService` interface - a simple service containing a single method
- Any of the supplied files in the `gr.hellasdirect.houseinsurance` package may be changed as you see fit, including the `HouseInsuranceService` interface itself
- You may choose any means of accepting input and producing output, including the use of a test harness

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The third party interfaces have Javadoc describing the parameters and behaviour. Please read this for further clarification. The Flood Risk associated with a postcode is defined in the third party class `FloodRisk.java`. The values should be self-explanatory.

For the Subsidence Watch third party, an unavailable or faulty underlying service dependency will throw a `SubsidenceAreaCheckerTechnicalFailureException.`

For the Flood Watch third party, an unavailable or faulty underlying service dependency will throw a `FloodAreaCheckerTechnicalFailureException.` Additionally, an undefined postcode will throw a `PostcodeNotFoundException`.

Acceptance Criteria

Postcode	# bedrooms	Thatched roof	Expected Output
Any invalid input			Message warning that insurance is not available
Any postcode		Yes	Message warning that insurance is not available
In subsidence area		No	Message warning that insurance is not available
Any non-subsidence area, with high flood risk		No	Message warning that insurance is not available
Any non-subsidence area, with medium flood risk	0 - 4	No	Premium £126.50
Any non-subsidence area, with low or no flood risk	0 - 4	No	Premium £110.00

A really useful thing to do would be to write short notes (and create a pdf - or txt file) of your thinking / rationale as you go about implementing the solution. Put these notes in the doc directory so that it is included in the zip file to return.

Explanation of terms:

Subsidence is the motion of a surface (usually, the Earth's surface) as it shifts downward relative to a datum such as sea-level.

Subsided house, called The Crooked House, the result of 19th century mining subsidence

Thatching is the craft of building a roof with dry vegetation such as straw, water reed, rushes, or heather, layering the vegetation so as to shed water away from the inner roof. It is a very old roofing method and has been used in both tropical and temperate climates. Thatch is still employed by builders in developing countries, usually with low-cost, local vegetation. By contrast in some developed countries it is now the choice of affluent people who desire a rustic look for their home, would like a more ecologically friendly roof, or who have purchased an originally thatched abode.

Explanations courtesy of WIKIPEDIA