DESIGN DOCUMENT

Lab 2

COMP8117-1-R-2021S

Version 1

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University of Windsor

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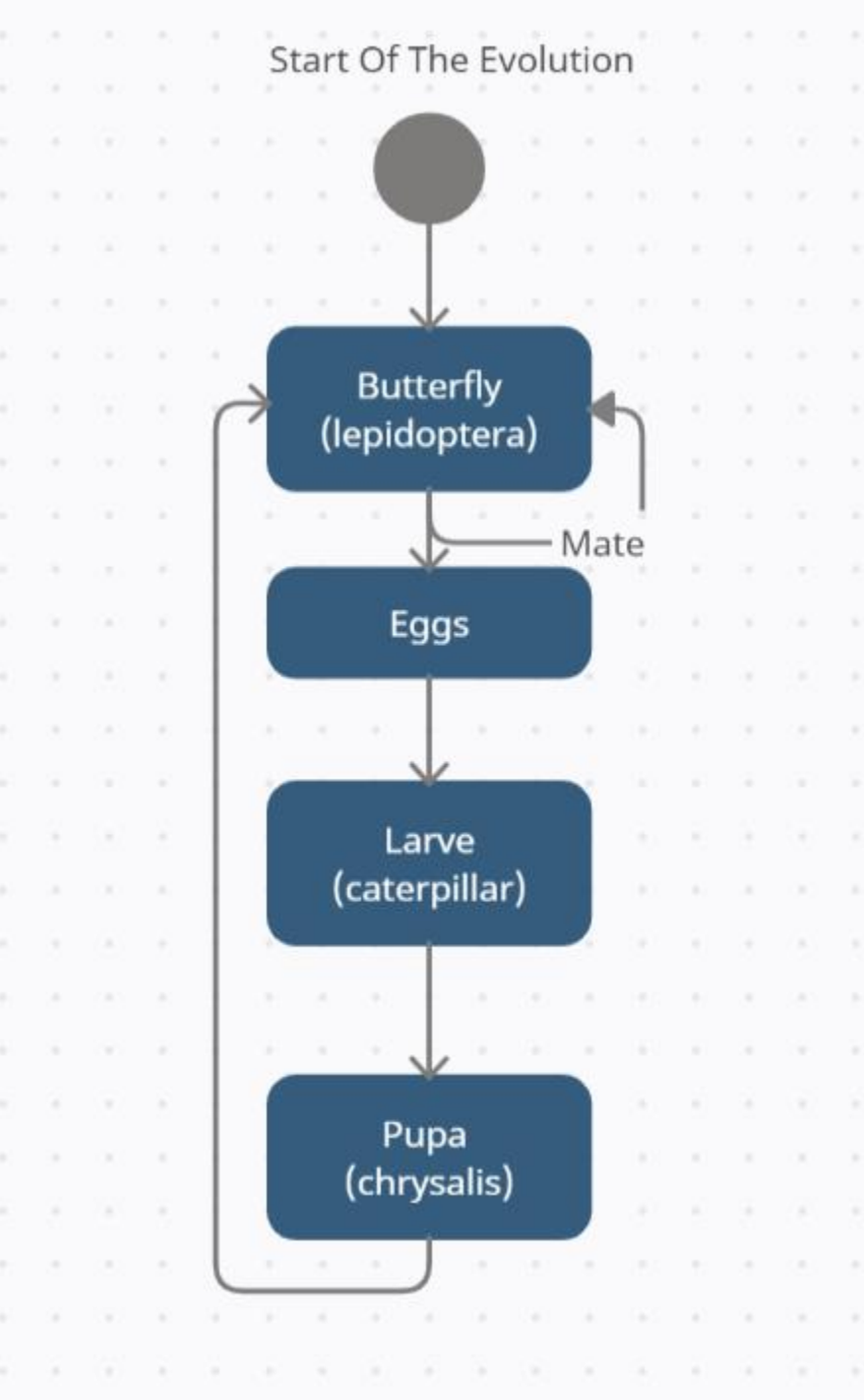
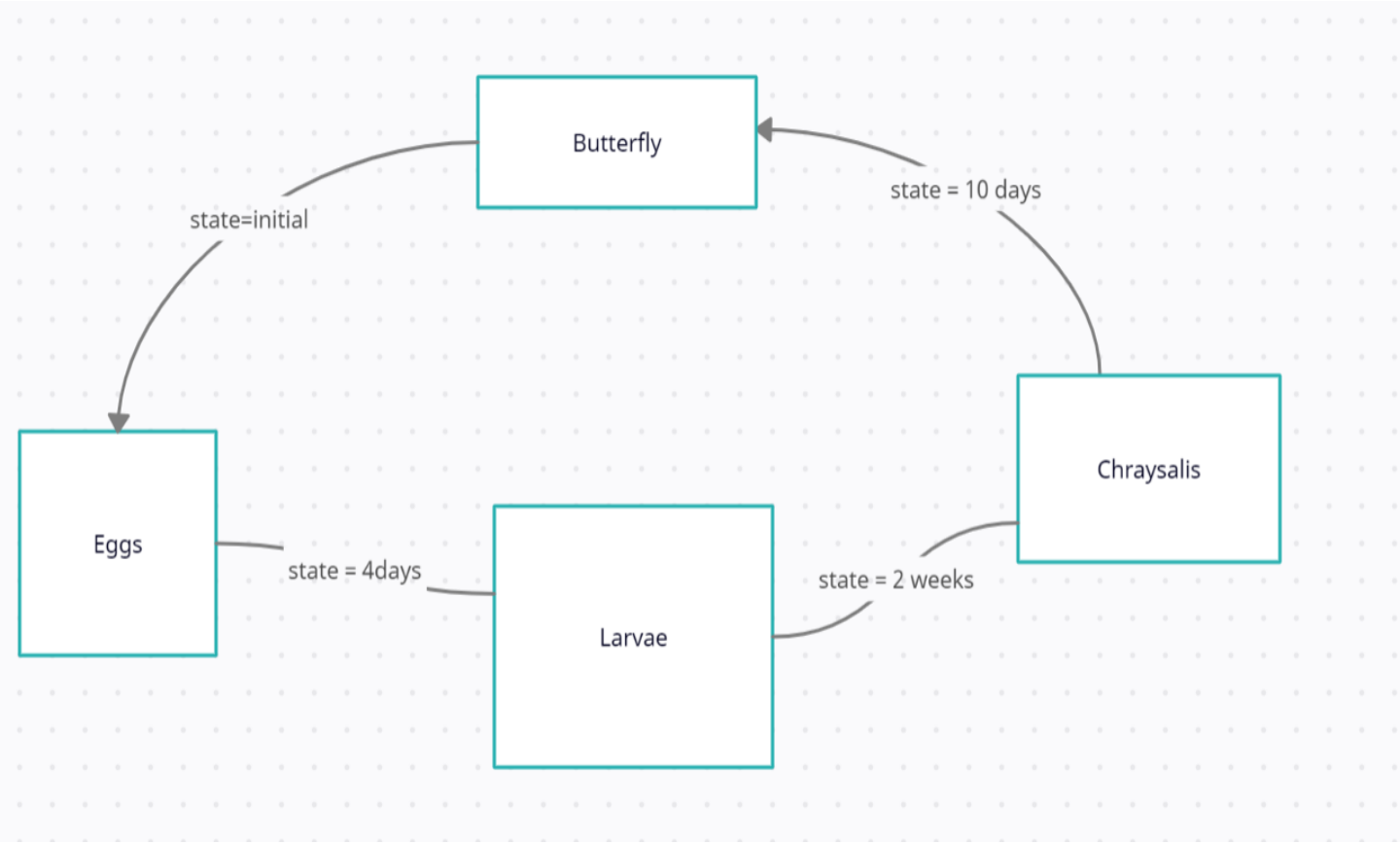
1. **Translate the user domain expressed in this need to specifications using UML diagrams of your choice.**
   The domain of the simulation of biological animals. Here in particular, we will be showing the evolution of the butterfly.
   The below state diagram shows the different stages of the evolution of the butterfly



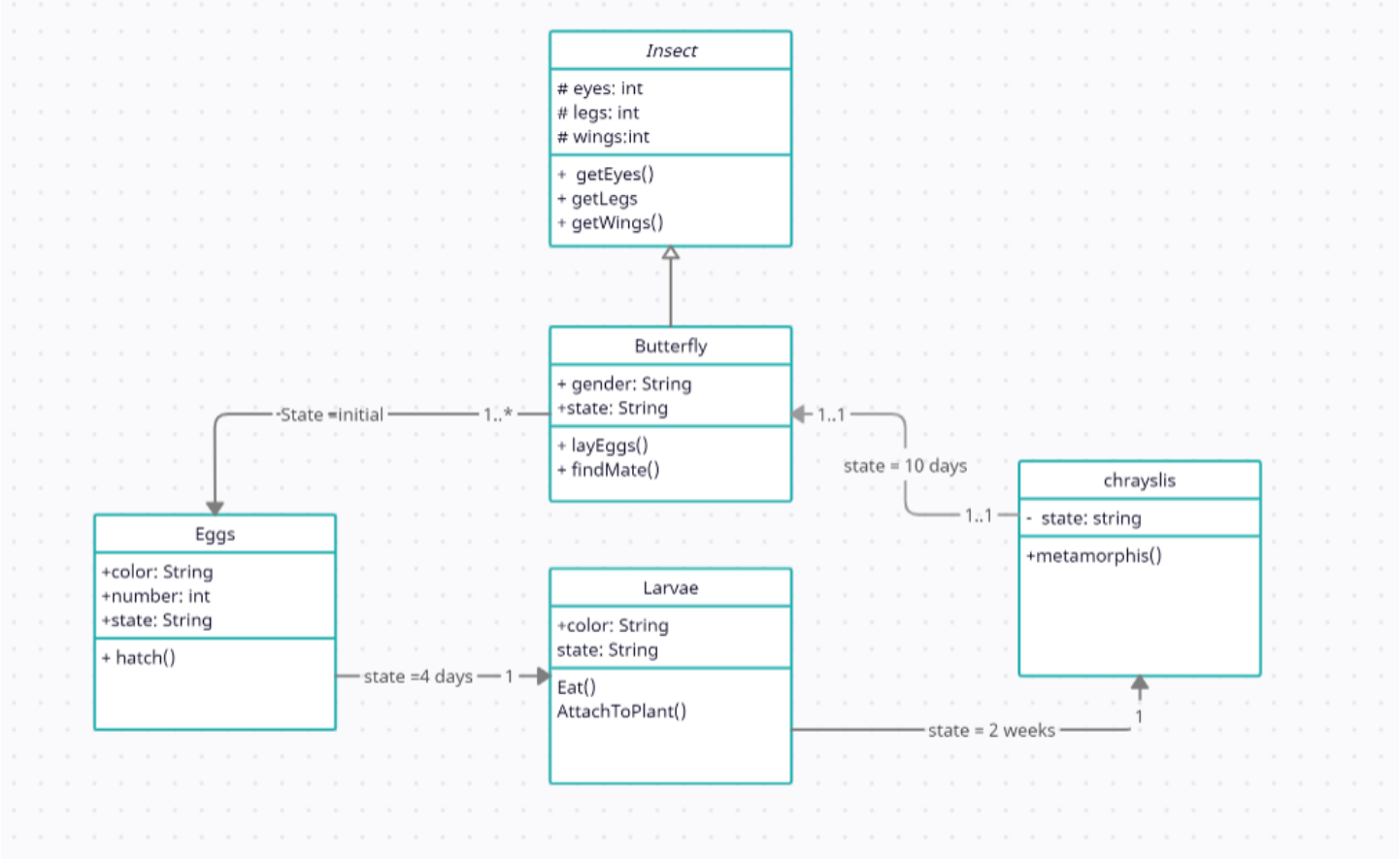
2. Choose an architecture to implement the simulator and create a high-level design using UML Class Diagrams. Your diagram must highlight the architecture.

This implementation uses state pattern defined



3. Choose a programming language and a framework to create your simulator. Create low-level diagrams representing your simulator.

The language that chosen to create the simulator is Java. The program uses state pattern to implement the simulation.



4. **Implement a prototype of simulator using the diagrams, programming language and framework you decided in question 3. Evaluate the percentage of work overload (how many details were not present in the diagram and that you had to add during the implementation).**

All the java files can be found with the attached package

```
Finding Male Partner
female butterflying laying eggs

Egg no :1
Number Of Days Passed since eggs laid: 1
Number Of Days Passed since eggs laid: 2
Eggs hatched after 2 days

Egg no :2
Number Of Days Passed since eggs laid: 1
Eggs hatched after 1 days

To avoid confusion, Displaying the lifecycle of only Fist egg
caterpillars eat for about 2 weeks to become fully grown
After 2 weeks, caterpillars find a plant where they attach themselves to evolve further
the process of metamorphis goes on for about 10 days
it is a process where old body parts of catterpillar goes extensive changes
to new body parts of butterfly

....After 10 days
Butterfly has emerged!!
```

The work overload:

1. For the butterfly class, 2 details were not present, the no of eggs laid and the partner details, which makes about 10% of the work.
2. Larvae has to extend the insects, which was not mentioned in the diagrams.