Graph Transformation Exercise

Kaitenzushi

A graph transformation system for Kaitenzushi (1/3)

- In this exercise you will model a (simplified) kaitenzushi, or *sushi-go-round* restaurant.
- In this kind of restaurants, there is a conveyor belt (typically a loop) where the chef puts sushi dishes, and clients can seat and take the sushi dishes they prefer.
- Each sushi dish has a color, which implies a different price.
- When the client leaves the restaurant, s/he needs to pay for the dishes s/he has eaten.

A graph transformation system for Kaitenzushi (2/3)

- We will assume that the belt is organized in a loop that passes through a kitchen, where there is a chef.
- For simplicity, we assume two kinds of dishes: blue, which cost 10€, and red, which cost 5€.
- To optimise the restaurant, the chef uses this strategy:
  - When there are no blue dishes in the belt, the chef cooks a blue dish, and puts it on the belt.
  - When any client eats one dish, the chef adds two red dishes.
  - When any dish has gone through four laps (and nobody has eaten it), the cook removes the dish.

A graph transformation system for Kaitenzushi (3/3)

- Clients can enter the restaurant at any time, and can take a free spot close to the belt.
- Clients may leave at any time, but only if they have eaten.
- The system should bookkeep the profits, as follows:
  - price payed by each client when leaving, minus
  - cost of the discarded dishes by the chef

Note: for simplicity, you do not need to model the synchronous movement of all dishes in the belt, but a rule that moves a dish from a belt segment to the next is enough.

Submission

What:

- The meta-model of the Kaitenzushi (in Ecore)
- An example model (in xmi)
- The graph transformation rules modelling the restaurant dynamics (in Henshin format)
- Use Henshin to create and test the graph transformation: https://www.eclipse.org/henshin/

When:

- December 2nd (23:59) via Moodle