

Cell Division

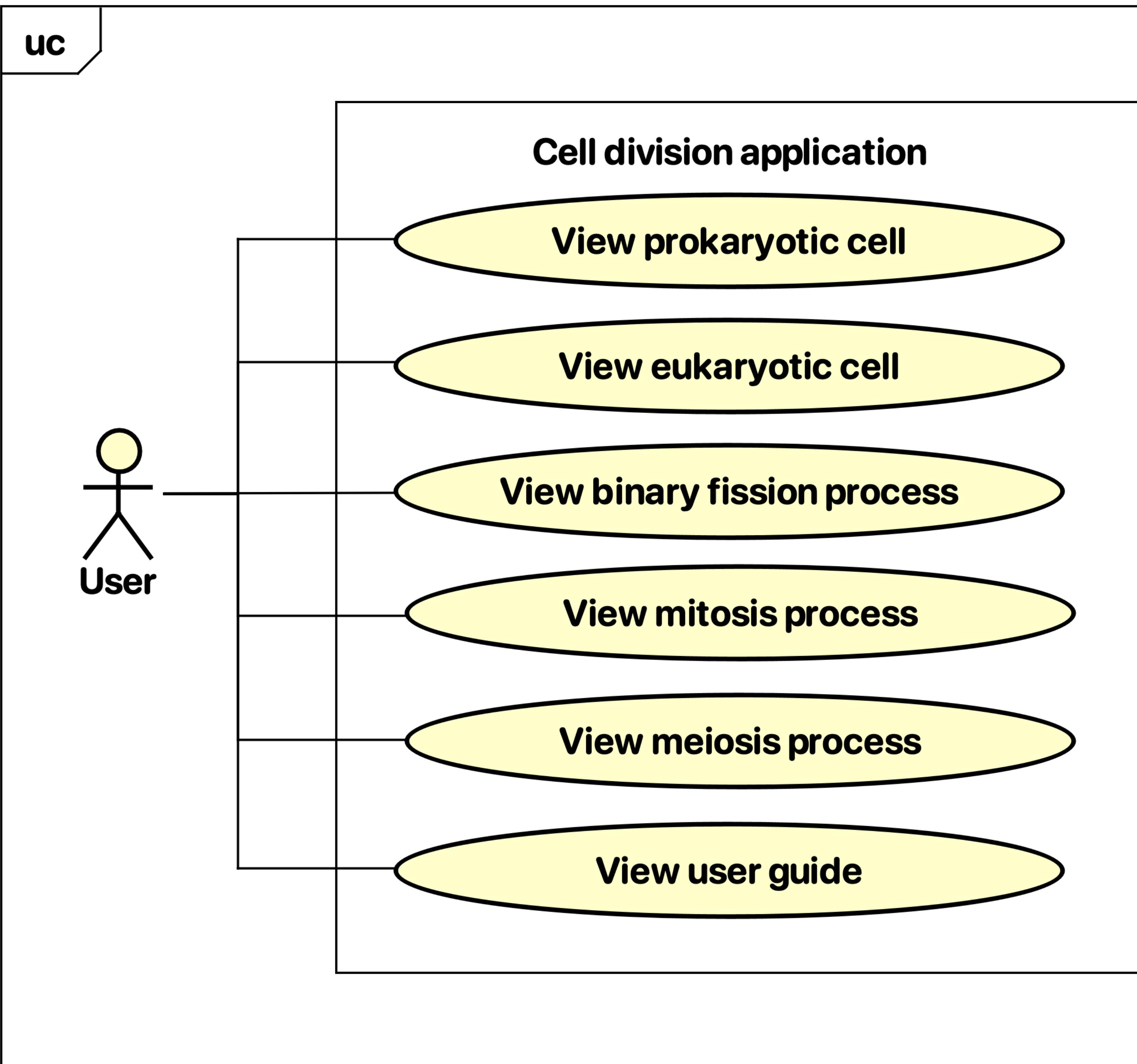
Nguyễn Huy Hải 20200194 – Nguyễn Trung Hiếu 20204909 –
Nguyễn Trung Hiếu 20204877 – Cù Duy Hiệp 20200212

Semester 20212 – OOP – Class 131678 (Miss Nguyễn Thị Thu Trang) – Group 09

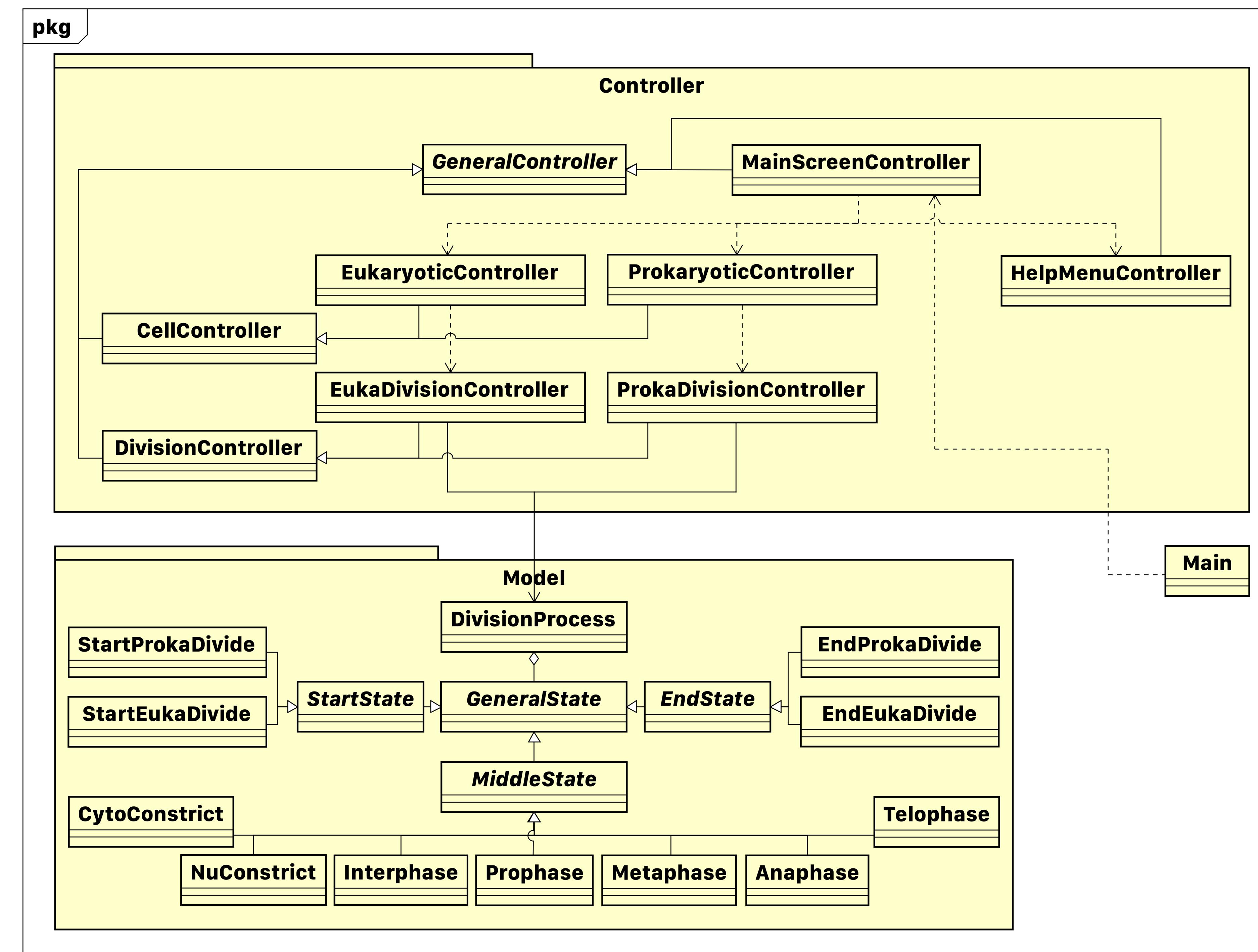
Problem Statement: Cell Division

- Prokaryotic cells: Binary fission,
 - Eukaryotic cells: Mitosis and Meiosis.
 - MainScreen:
 - Buttons to view a prokaryote or a eukaryote.
 - Help: User guide and app description.
 - CellScreen:
 - General structure, components and their details.
 - Button(s) leading to associated division process(es).
 - DivisionScreen:
 - View division process, back, forward, pause, replay.
- *prokaryotic cells*: tế bào nhân sơ
 - *eukaryotic cells*: tế bào nhân thực
 - *binary fission* (also *amitosis*): trực phân
 - *mitosis*: nguyên phân
 - *meiosis*: giảm phân

Use case diagram

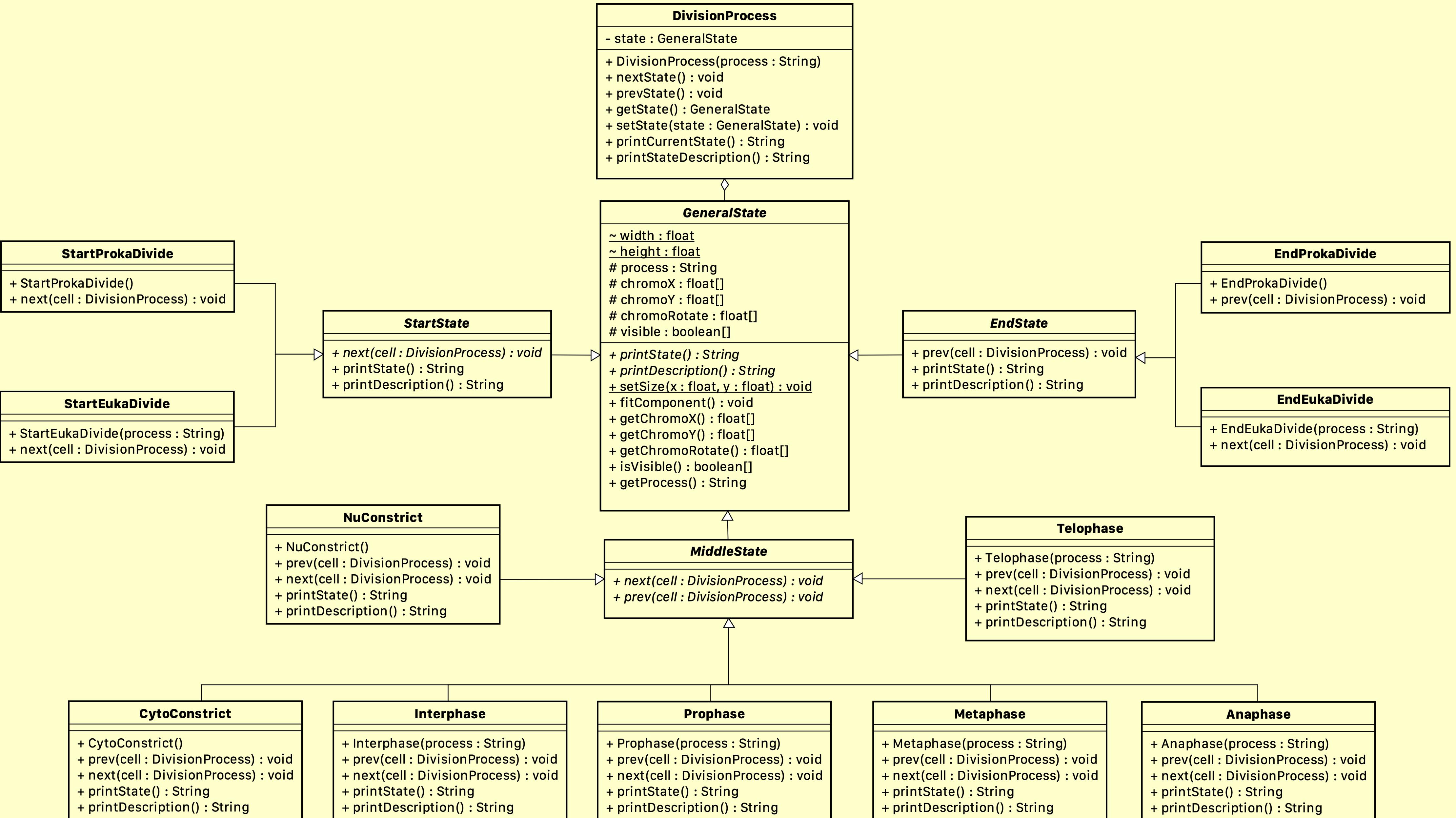


General class & package diagram

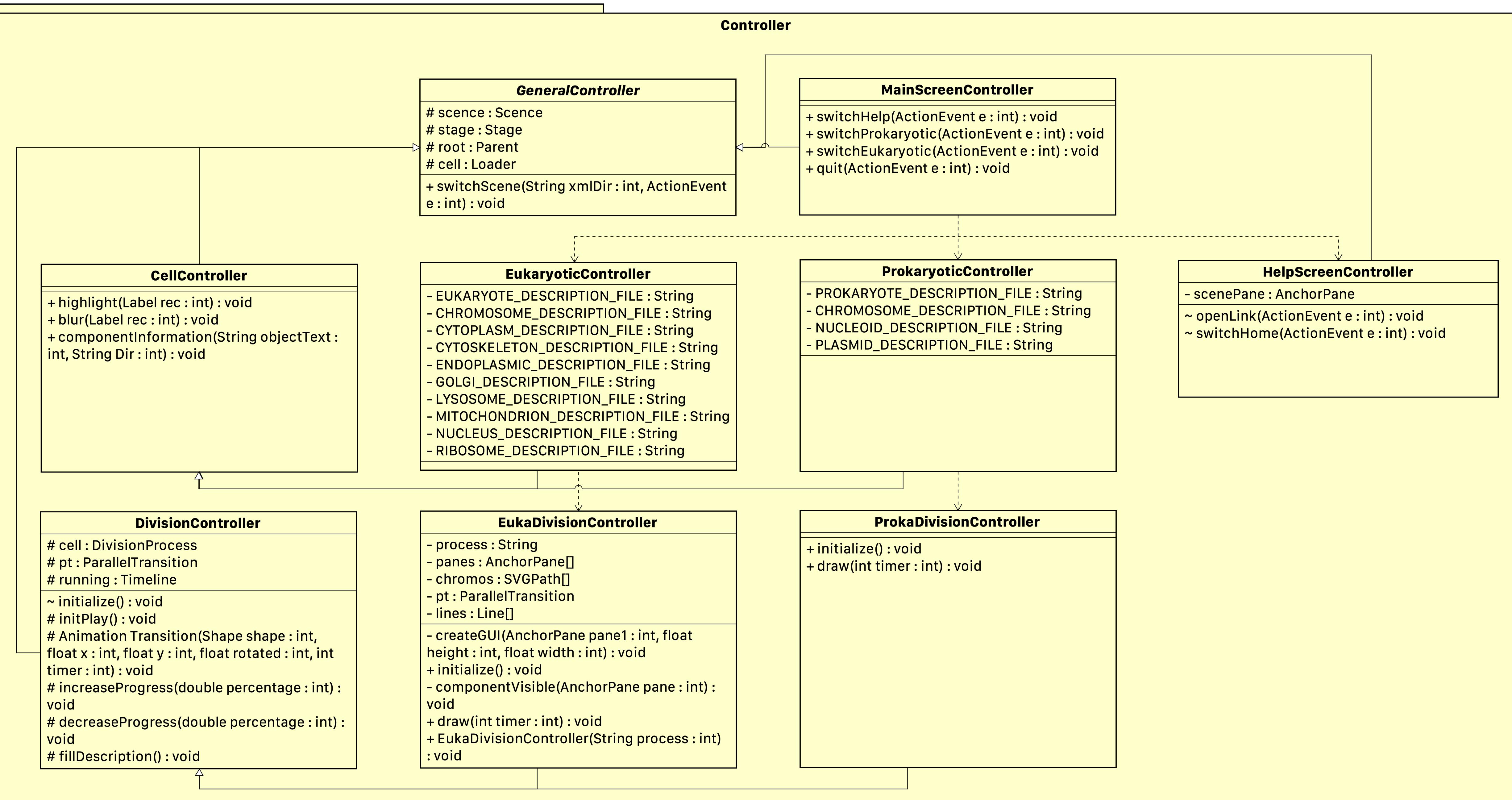


pkg

Model



pkg



OOP principles

- Polymorphism:
 - DivisionProcess: nextState(), prevState(), printCurrentState(), printStateDescription() change behaviour at runtime according to the GeneralState object
- Encapsulation:
 - Data attributes all protected or private, can only interact through public methods such as getChromoX(), getChromoY().
- Abstraction:
 - Utilised throughout the project. GeneralController is an abstract class, for example.

OOP principles

- Inheritance:
 - controller package: GeneralController act as the base for inheritance. Cell screens all inherit from CellController, while division screens inherit from DivisionController.
- Aggregation:
 - DivisionProcess has an instance of GeneralState.

Demo

[Link](#)

