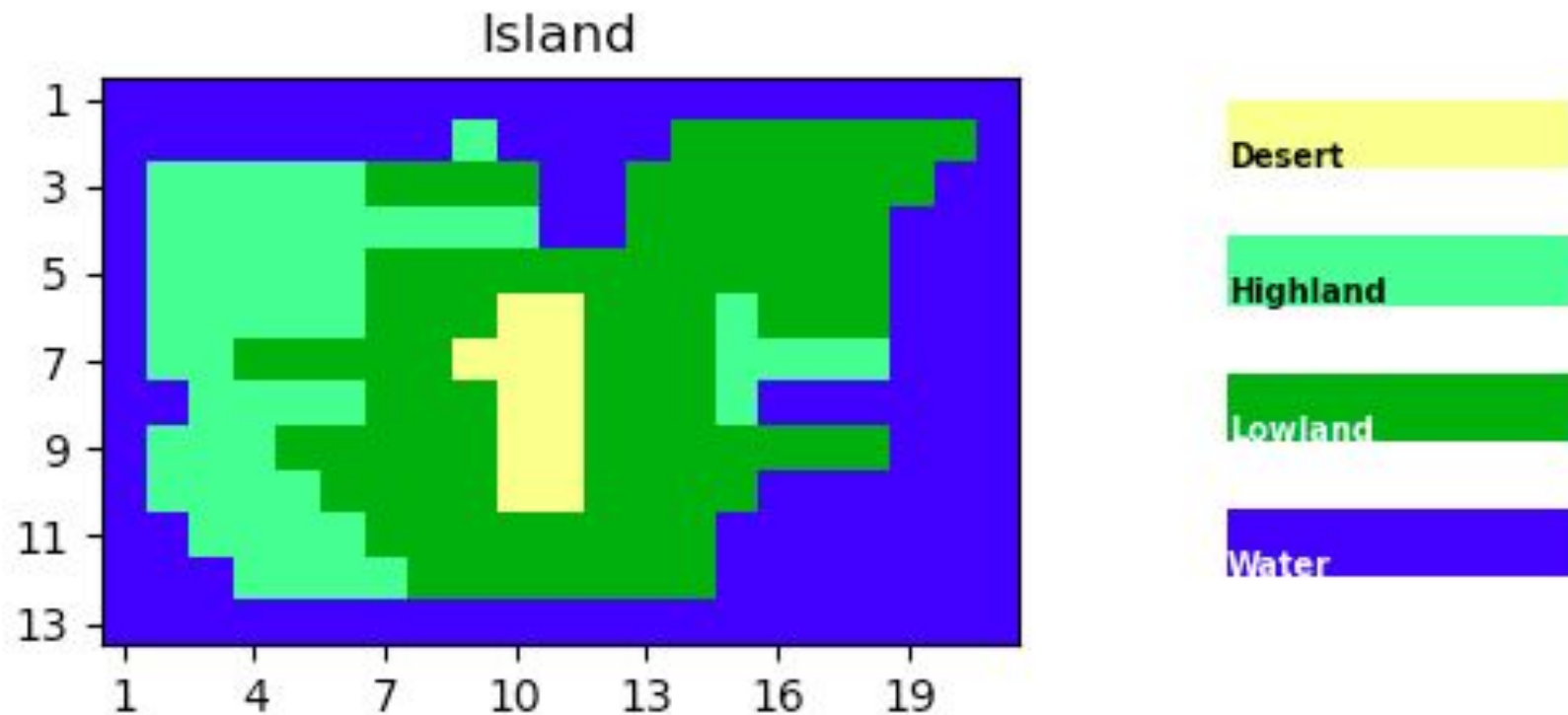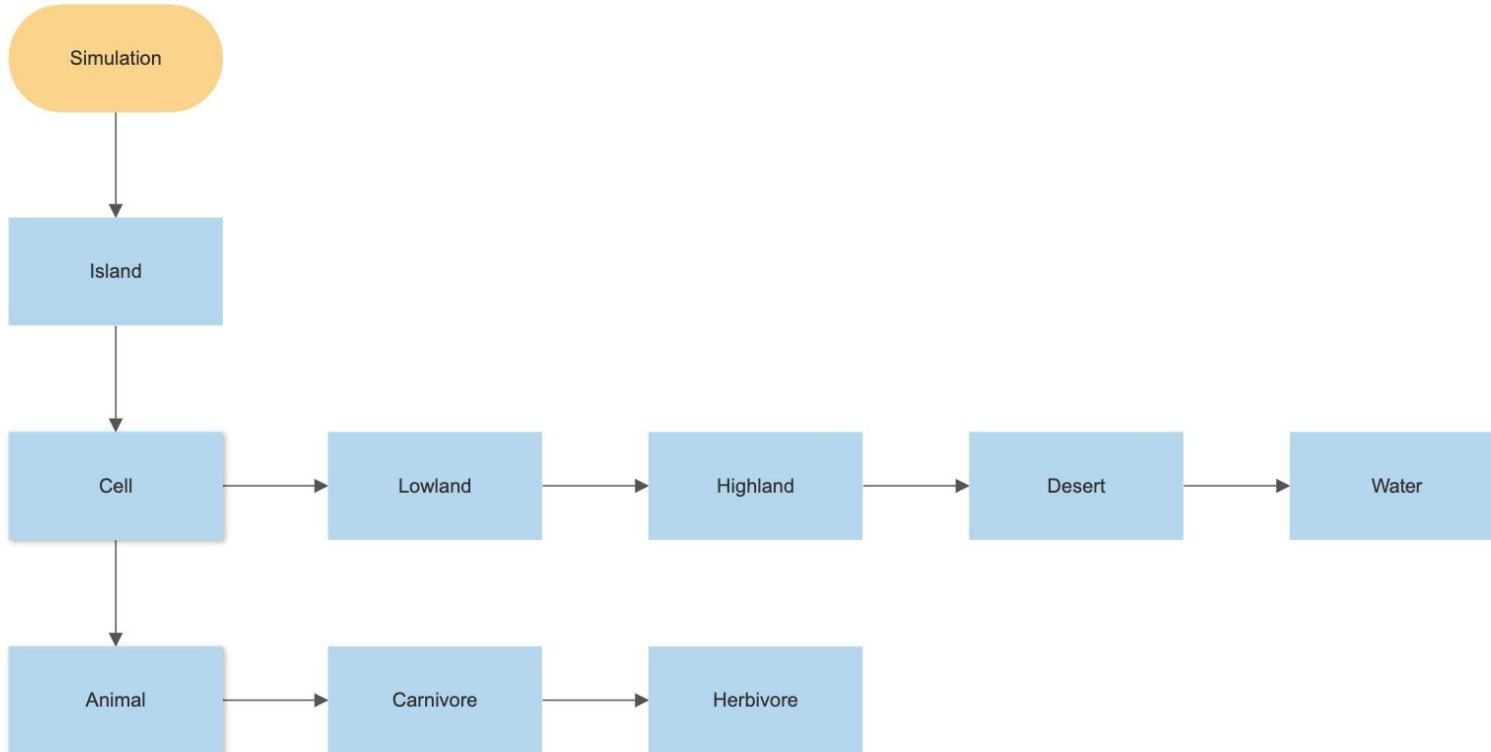# BioSim Juni 2022

Gruppe 19:
Herman Ellingsen og Ole Gilje Gunnarshaug

Simulation on island

Island

Visuell representering av kodestrukturen

Test coverage

```
---------- coverage: platform darwin, python 3.8.13-final-0 ----------
Name                                                      Stmts   Miss   Cover
-------------------------------------------------------------------------------
.tox/py38/lib/python3.8/site-packages/biosim/__init__.py      3      0    100%
.tox/py38/lib/python3.8/site-packages/biosim/animal.py       95      2     98%
.tox/py38/lib/python3.8/site-packages/biosim/cell.py        115     10     91%
.tox/py38/lib/python3.8/site-packages/biosim/graphics.py    203     34     83%
.tox/py38/lib/python3.8/site-packages/biosim/island.py       48      8     83%
.tox/py38/lib/python3.8/site-packages/biosim/simulation.py  127     18     86%
-------------------------------------------------------------------------------
TOTAL                                                       591     72     88%
```

Optimalisering

Name	Call Count	Time (ms)		Own Time (ms)	
fitness_update	14454251	21612	29,7 %	18359	25,3 %
kill_proba	15218408	9161	12,6 %	7714	10,6 %
kill	15218408	14076	19,4 %	4704	6,5 %
<listcomp>	445645	18109	24,9 %	4032	5,5 %
birth	1797838	10175	14,0 %	3256	4,5 %
<built-in method math.exp>	28908502	3252	4,5 %	3252	4,5 %
<method 'random' of '_random.Rand	22692044	2295	3,2 %	2295	3,2 %
gauss	1797838	2860	3,9 %	1949	2,7 %
simulate	2	70002	96,3 %	1851	2,5 %
<listcomp>	273000	9378	12,9 %	1634	2,2 %
want_to_migrate	2418351	5681	7,8 %	1592	2,2 %
animals_to_migrate	109200	7267	10,0 %	1335	1,8 %
annual_weight_loss	2248736	4222	5,8 %	1206	1,7 %
age_update	2248736	4366	6,0 %	1134	1,6 %
animal_dies	2248736	1311	1,8 %	1087	1,5 %

Måter å forbedre prosjektet:

- Optimalisering:
  - Fitness updates
  - Age and weight updates
- Landtype classes
  - Flere attributter
- Migration funksjonen
  - Generell for alle arter
- Island class
  - Brukt på feil måte
- Bug i herbivores
  - Avtar i begynnelsen

```python
def age_update(self):
    self.age += 1
    self.fitness_update()
def annual_weight_loss(self):
    self.weight -= self.params["eta"]*self.weight
    self.fitness_update()
```

```python
class Highland: "Class that will provide attributes to cell class"
    f_max = 300
    @classmethod
    def set_attr(cls, dicto):
        setattr(cls, "f_max", dicto["f_max"])
```

Eksempel av simulering med "check_sim.py" (utvidet til 300 år)