ETH
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Programming Techniques for Scientific Simulations Exercise 5

HS 15
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Problem 5.1 Simpson integration with function objects

In a previous exercise, we have written a static library to perform simpson integration of $\sin(x)$ in the region $x \in [0, \pi]$, where the function is passed as a pointer. In this exercise, implement the simpson integration of $\exp(-\lambda x)$ in the region $x \in [0, 1]$ by the use of a function object.

1. Rewrite the simpson function so that it works with function objects.

2. Introduce templates for the integration boundaries `a` and `b`. What are the concepts of all template arguments?
   What happens if you call your function like `simpson(0, 1, 128, func_obj)`?

Problem 5.2 Class Header for Animal and Genome

If you have not understood the Penna Model yet, please read the paper as suggested in Exercise 4.2. Think of an animal and a genome as objects and write the class headers[1] for them.

[1] only the definition of the class and declaration of members.