Programming Techniques for Scientific Simulations Exercise 9

ETH

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HS 10
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Problem 9.1   Simulating the Penna Model

In this week, please run the simulation of the Penna model.

Problem 9.2   Simpson Integration using Inheritance

Please implement simpson integration of $\sin(\lambda x)$ in double precision using inheritance. Below is how you should start.

```
class unary_function
{
public:
virtual double operator()(double x) const = 0;
};

double simpson_integrator(unary_function const & f, double x0, double xN, int N);
```

1. Please complete the missing implementations of the above code.

2. Please benchmark the 3 different versions of the simpson integration code:

   (a) via function pointer

   (b) via function object

   (c) via inheritence