

C++11 code 11.2.10: Sub-problem (11-2.h): function `solveCP()` → [GitLab](#)

```
2  const static Eigen::IOFormat CSVFormat(Eigen::FullPrecision ,
3                                          Eigen::DontAlignCols, ",", "\n");
4
5  double u0(double x) { return (0.0 < x && x <= 1.0) ? 1.0 : -1.0; }
6
7  int main() {
8      unsigned int N = 100;
9      double a = -1.2;
10     double b = 2.2;
11     double T = 1.0;
12     double h = (b - a) / N;
13
14     Eigen::VectorXd x = Eigen::VectorXd::LinSpaced(N, a - 0.5 * h, b - 0.5 * h);
15     Eigen::VectorXd uinitial = x.unaryExpr(std::ref(u0));
16     Eigen::VectorXd ufinal =
17         EngquistOsherNumericalFlux::solveCP(a, b, uinitial, T);
18
19     std::ofstream file;
20     file.open("ufinal.csv");
21     file << x.transpose().format(CSVFormat) << std::endl;
22     file << ufinal.transpose().format(CSVFormat) << std::endl;
23     file.close();
24
25     std::cout << "Generated ufinal.csv" << std::endl;
26     systemcall::execute("python3 scripts/plot_solution.py ufinal.csv ufinal.eps");
27
28     return 0;
29 }
```