

# **High Performance Computer Architectures Practical Course - Exercise 5 -**

Tutorium 1

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## 1 Section XYZ

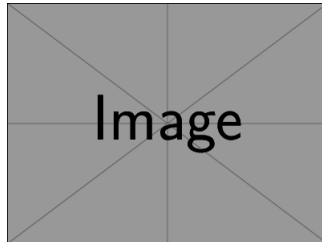


Figure 1: Output

```
1  // SIMD calculations with Vc using dataSIMD3 as input
   (use cast here)
2  TStopwatch timerSIMD3;
3  for (int io = 0; io < NIterOut; io++)
4      for (int i = 0; i < NVectors; i++)
5      {
6          // Using reinterpret_cast we reinterpret the
           memory representation of the input data-
           structure as Vc vectors
7          float_v &aV = *(reinterpret_cast<float_v *>(
           dataSIMD3.data[i].a));
8          float_v &bV = *(reinterpret_cast<float_v *>(
           dataSIMD3.data[i].b));
9          float_v &cV = *(reinterpret_cast<float_v *>(
           dataSIMD3.data[i].c));
10         float_v &xV = *(reinterpret_cast<float_v *>(
           dataSIMD3.data[i].x));
11
12         // We calculate the discriminant and roots here
           using SIMD operations
13         const float_v det = bV * bV - 4 * aV * cV;
14         xV = (-bV + sqrt(det)) / (2 * aV);
15     }
16     timerSIMD3.Stop();
```

File 1: QuadraticEquation.cpp