

1D

Sequential reference code

```
for (unsigned int i = 0; i < arrayWidth; ++i) {
    outputC[i] = inputScalar[0] * inputA[i] + inputB[i];
}
```

Output result verification

```
unsigned int size = width * height;
for (unsigned int k = 0; k < size; ++k)
{
    if (resultPtr[k] != inputScalar[0] * inputA[k] + inputB[k])
    {
        LogError("Verification failed at %d: (%f * %f + %f = %f)\n", k,
inputScalar[0], inputA[k], inputB[k], resultPtr[k]);
        result = false;
    }
}
```

2D

Sequential reference code and output result verification by comparing sequential result with kernel result

```
for (unsigned int i = 0; i < width; ++i) { // widthA
    for (unsigned int j = 0; j < height; ++j) { // heightX
        cl_float sum = 0; // AX
        for (unsigned int k = 0; k < height; ++k) { // heightA
            sum += inputA[i * height + k] * inputX[k * width + j];
            //LogInfo("i j k= %d %d %d, inputA=%f, inputX=%f, sum = %f\n", i, j,
k, inputA[i * height + k], inputX[k * width + j], sum);
        }
        if (resultPtr[i * height + j] != sum + inputY[i * height + j])
        {
            LogError("Verification failed at %d %d, resultPtr=%f, sum=%f,
inputY=%f\n", i, j, resultPtr[i * height + j], sum, inputY[i * height + j]);
            result = false;
        }
    }
}
```

Performance table (average over 100 runs if not specified)

	1D	2D
Kernel	0.320283 ms	1316.753296 ms
Sequential	0.020057 ms	191214.00 ms (average over 15 runs)

```
Average = 1312.461792
NDRange performance counter time 1294.050415 ms.
Average = 1312.250122
NDRange performance counter time 1284.253906 ms.
Average = 1311.932007
NDRange performance counter time 1358.413208 ms.
Average = 1312.454224
NDRange performance counter time 1284.830322 ms.
Average = 1312.147339
NDRange performance counter time 1367.125854 ms.
Average = 1312.751465
NDRange performance counter time 1359.637329 ms.
Average = 1313.261108
NDRange performance counter time 1415.044678 ms.
Average = 1314.355591
NDRange performance counter time 1506.086304 ms.
Average = 1316.395264
NDRange performance counter time 1406.847656 ms.
Average = 1317.347412
NDRange performance counter time 1290.409790 ms.
Average = 1317.066772
NDRange performance counter time 1368.999512 ms.
Average = 1317.602173
NDRange performance counter time 1304.205933 ms.
Average = 1317.465454
NDRange performance counter time 1308.875000 ms.
Average = 1317.378662
NDRange performance counter time 1254.843018 ms.
Average = 1316.753296
```

Figure A – Average over 100 runs using kernel. (2D)

```

Sequential ref code performance counter time 155528.343750 ms.
Average = 156190.359375
Finished verify 2D
Sequential ref code performance counter time 155790.796875 ms.
Average = 156133.265625
Finished verify 2D
Sequential ref code performance counter time 158598.359375 ms.
Average = 156441.406250
Finished verify 2D
Sequential ref code performance counter time 156992.937500 ms.
Average = 156502.687500
Finished verify 2D
Sequential ref code performance counter time 155462.546875 ms.
Average = 156398.671875
Finished verify 2D
Sequential ref code performance counter time 158043.484375 ms.
Average = 156548.203125
Finished verify 2D
Sequential ref code performance counter time 572537.625000 ms.
Average = 191214.000000

```

Figure B – Average over 15 runs using sequential (2D)

```

NDRange performance counter time 0.288821 ms.
Average of 1D for kernel = 0.323144
Finished verify 1D
NDRange performance counter time 0.297026 ms.
Average of 1D for kernel = 0.322872
Finished verify 1D
NDRange performance counter time 0.235077 ms.
Average of 1D for kernel = 0.321967
Finished verify 1D
NDRange performance counter time 0.253949 ms.
Average of 1D for kernel = 0.321273
Finished verify 1D
NDRange performance counter time 0.253949 ms.
Average of 1D for kernel = 0.320593
Finished verify 1D
NDRange performance counter time 0.289641 ms.
Average of 1D for kernel = 0.320283

```

Figure C – Average over 100 runs using kernel (1D)

```
Sequential ref code counter time 0.014769 ms.  
Average of 1D for sequential = 0.019444 ms  
Sequential ref code counter time 0.015180 ms.  
Average of 1D for sequential = 0.019400 ms  
Sequential ref code counter time 0.015180 ms.  
Average of 1D for sequential = 0.019357 ms  
Sequential ref code counter time 0.047180 ms.  
Average of 1D for sequential = 0.019638 ms  
Sequential ref code counter time 0.061539 ms.  
Average of 1D for sequential = 0.020057 ms
```

Figure D – Average over 100 runs using sequential (1D)