

# Tiled Code Generator

Tiling is an important program transformation that is used to improve data locality and parallelization granularity. We provide a tiled code generator that produces tiled code with wavefront parallelization supported for the shared memory machine.

## Usage

Let's use the classic matrix multiplication as an illustration example, whose alphabets code is the following:

```
affine matrix_product {P, Q, R|P>0 && Q>0 && R>0}
  given float A {i,k| 0<=i<P && 0<=k<Q};
         float B {k,j| 0<=k<Q && 0<=j<R};
  returns float C {i,j,k| 0<=i<P && 0<=j<R && k==Q};
using
  float temp_C {i,j,k|0<=i<P && 0<=j<R && 0<=k<=Q};
through
  temp_C[i,j,k] = case
    {|k>0} : temp_C[i,j,k-1] + A[i,k-1]*B[k-1,j];
    {|k==0} : 0;
  esac;
  C = temp_C;
.
```

The tiled code generator is called through ScheduledC, therefore, the first step for the code generation is the same with ScheduledC – specify spacetime map and memory map.

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