

Schedule Code Generator

Given an affine system and a target mapping, this page shows how to generate the scheduled code based on the given target mapping.

Usage

For the Alphabets program for matrix product.

```
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 following commands will generate the scheduled code based on the given target mapping.

```
# Load an alphabets program and store as 'program'
program = ReadAlphabets("../..//alphabets/matrix_product.ab");
# Define a variable 'system' to store the system name
system = "matrix_product";
# Specify the output directory
outDir = "../..//test-out/scheduleC/";

# Set the target mapping as described in the target mapping section[[Target Mapping]]
setSpaceTimeMap(program, system, "temp_C", "(i,j,k->i,j,k)");
setSpaceTimeMap(program, system, "C", "(i,j,k->i,j,k)");
# Set first and second dimension to be parallel (or generate sequential code by no parallel specification)
setParallel(program, system, "", "0,1");

# Set the statement ordering
setStatementOrdering(program, system, "temp_C", "C");
```

```
# Set the memory map
setMemoryMap(program, system, "temp_C", "matrix_product", "(i,j,k->i,j)");
```

```
# Generate scheduled code according to the target mapping
generateScheduledCode(program, system, outDir);
```

```
# Generate the makefile
generateMakefile(program, system, outDir);
```

```
# Generate the wrapper to call the generated program
generateWrapper(program, system, outDir);
```

A Makefile, matrix_product.c and matrix_product-wrapper.c are generated for the above example. Use the Makefile to compile the 'C' files.

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