iDFOS Tool Tutorial

1   Introduction

Dataflow Graph is widely used to model data sensitive programs. iDFOS tool is developed to analysis, optimal and scheduling of suck kind of graphs, usually Synchronous Dataflow Graphs(SDFGs).

2   Installation

2.1   Download

Download site: http://lcs.ios.ac.cn/~zxy/tools/idfos.html

2.2   Install

iDFOS is developed base on java language. Correct java environment is needed on your computer, please make sure that you have installed JDK already.

If you already download and unzip iDFOS tool, for example in "/home/...", you can use "java -jar /home/iDFOS/iDFOS.jar" to open GUI of this tool. Although this tool can run on both Windows and Linux, Linux operating system is recommended.

You can use most of functions in iDFOS if you configure java environment correctly. If you want to use functions in iDFOS which is integrated with other tool, you need to install other software packet.

1. If you want to use "optimalScheduling&Mapping" function, please download tool UPPAAL in http://www.uppaal.com/ and tool UPPAAL CORA in http://people.cs.aau.dk/~adavid/cora/.Then put "verifyta" script according to your operating system in tool UPPAAL/UPPAAL CORA into "/exebinary/uppaal" and "/exebinary/uppaalCora" in iDFOS. If you want to use iDFOS in Windows, please rename the script with "winverifyta"..

3   Function Description

3.1   Directories of tool

File Name	Function Description
/iDFOS.jar	To open GUI of this tool
/demo	Input models of iDFOS, for example SDFG model and execution model
/exebinary	External script used in iDFOS
/configurefiles	Configure files
/tempfiles	To store temp files when iDFOS runs

3.2   Model function

1.Synchronous Dataflow Graphs

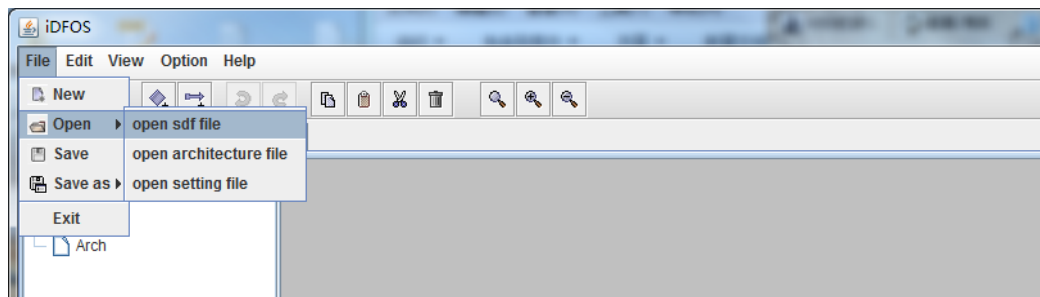Select "File->Open->open sdf file", shown in Figure 3. 1.

Figure 3. 1   Open Synchronous Dataflow Graphs

Select SDFG file,"/demo/addMultiply/addMultiplySDF.xml" in demo file for example. You can get graphic SDFG shown in Figure 3. 2. You can get vertices and edges information when you click small circle before
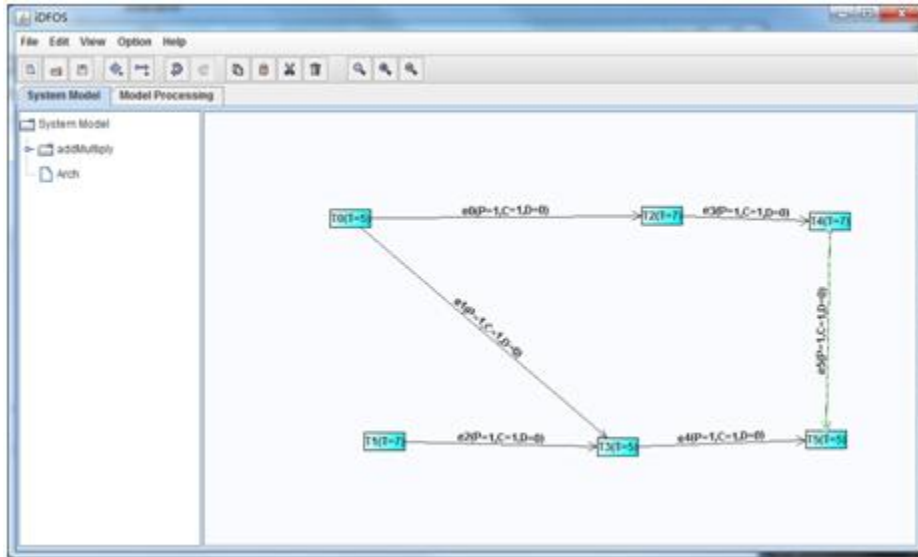
"addMultiply" node in left tree.

Figure 3. 2   addMultiplySDF.xml

2.Execution model

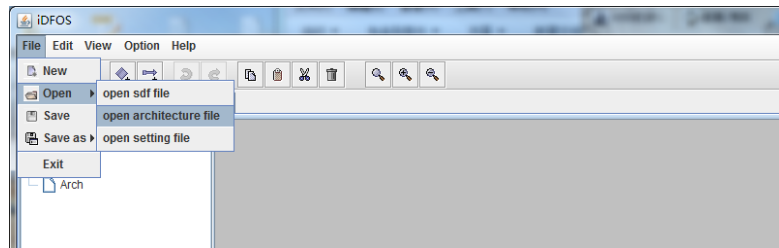Select "File->Open->open architecture file" in menu bar, shown in Figure 3. 3.

Figure 3. 3   execution model

Select execution model file,"/demo/addMultiply/addMultiplyArch.xml" in demo files for example, you can get graphic execution model shown in Figure 3. 4. You can get processor information when you click small circle before "Arch" node in left tree.

Figure 3. 4   addMultiplyArch.xml

3.3　Optimization, scheduling and analysis function

Press "Model Processing" tab panel, you can switch to optimal, scheduling and analysis function area shown in Figure 3. 5. Each node in function tree is corresponding to a function.
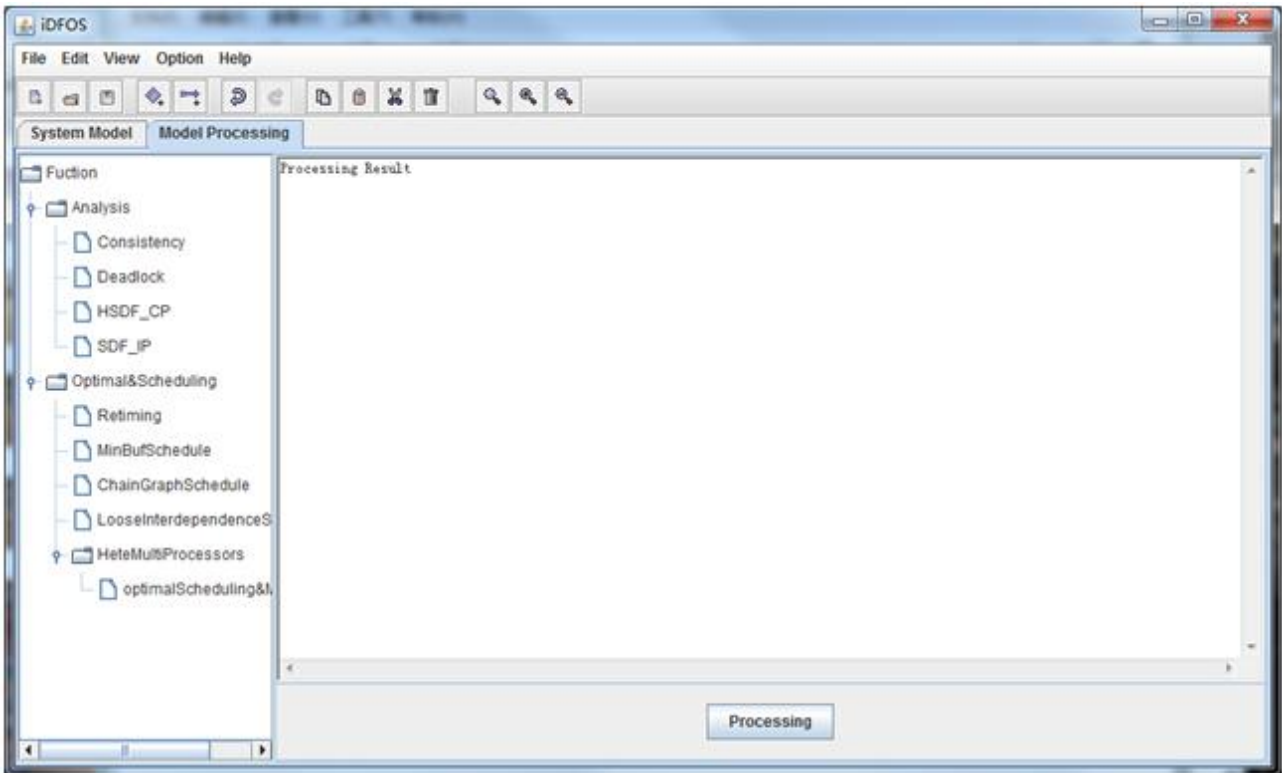

Figure 3. 5　optimal, scheduling and analysis function area

For example, function panel of "Optimal&Scheduling/HeteMultiProcessors/optimalScheduling&Mapping" node is shown in Figure 3. 6.
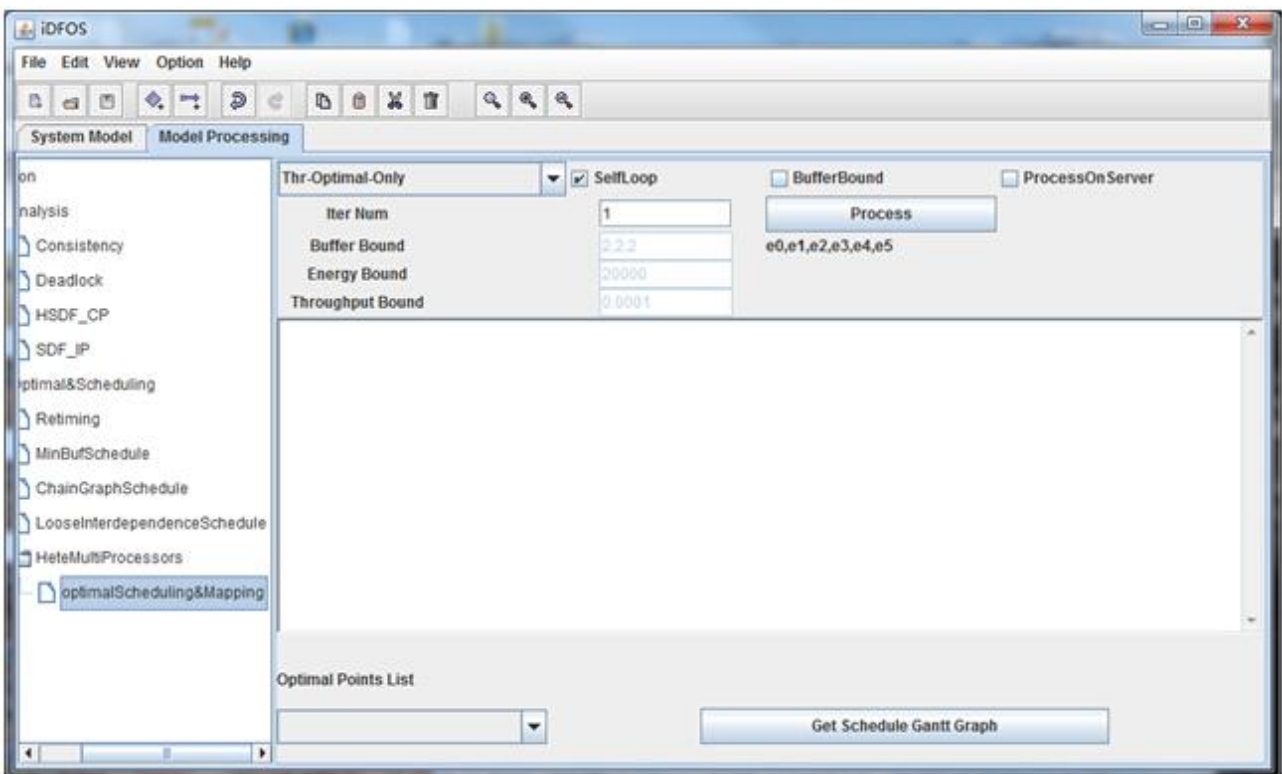

Figure 3. 6　function panel of optimalScheduling&Mapping node

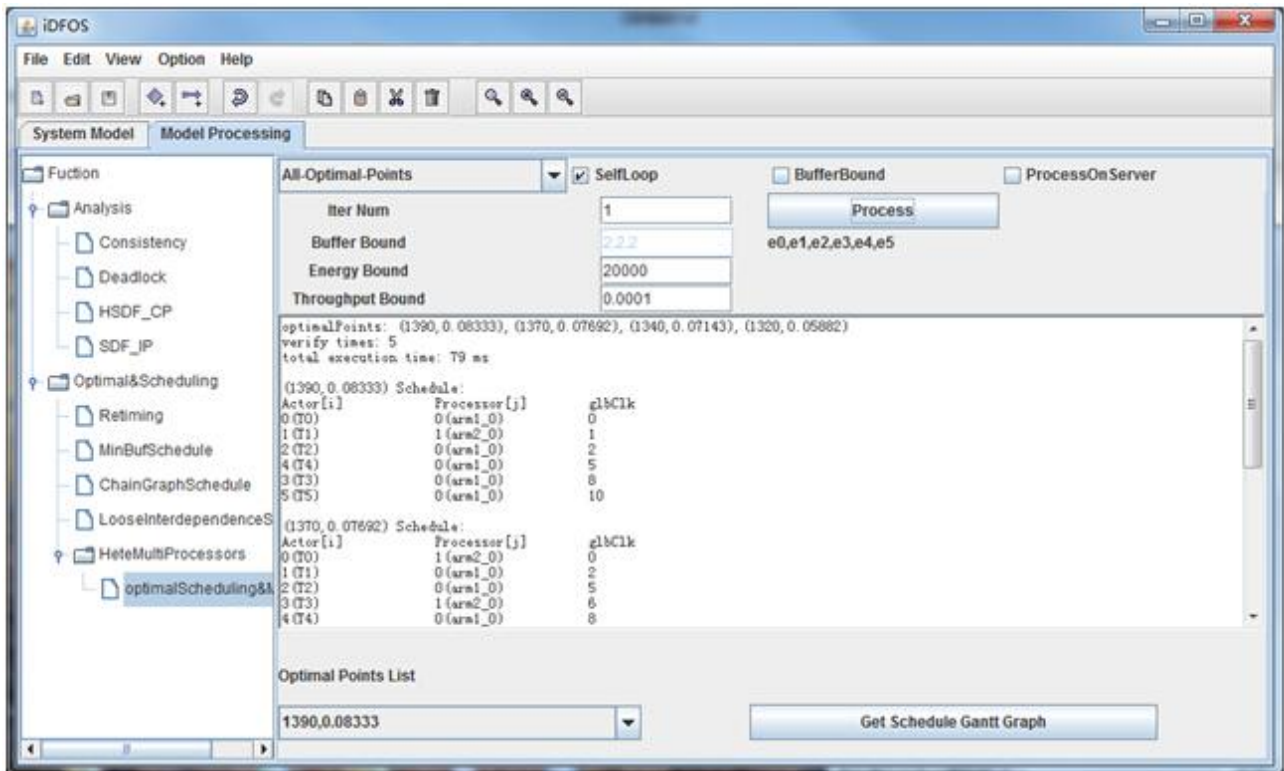Optimal and scheduling after pressing "process" button is shown in FigureFigure 3. 7.

Figure 3. 7   processing result of optimalScheduling&Mapping node

Press the "Get Schedule Gantt Graph" button to get schedule of optimal point, shown in Figure 3. 8.
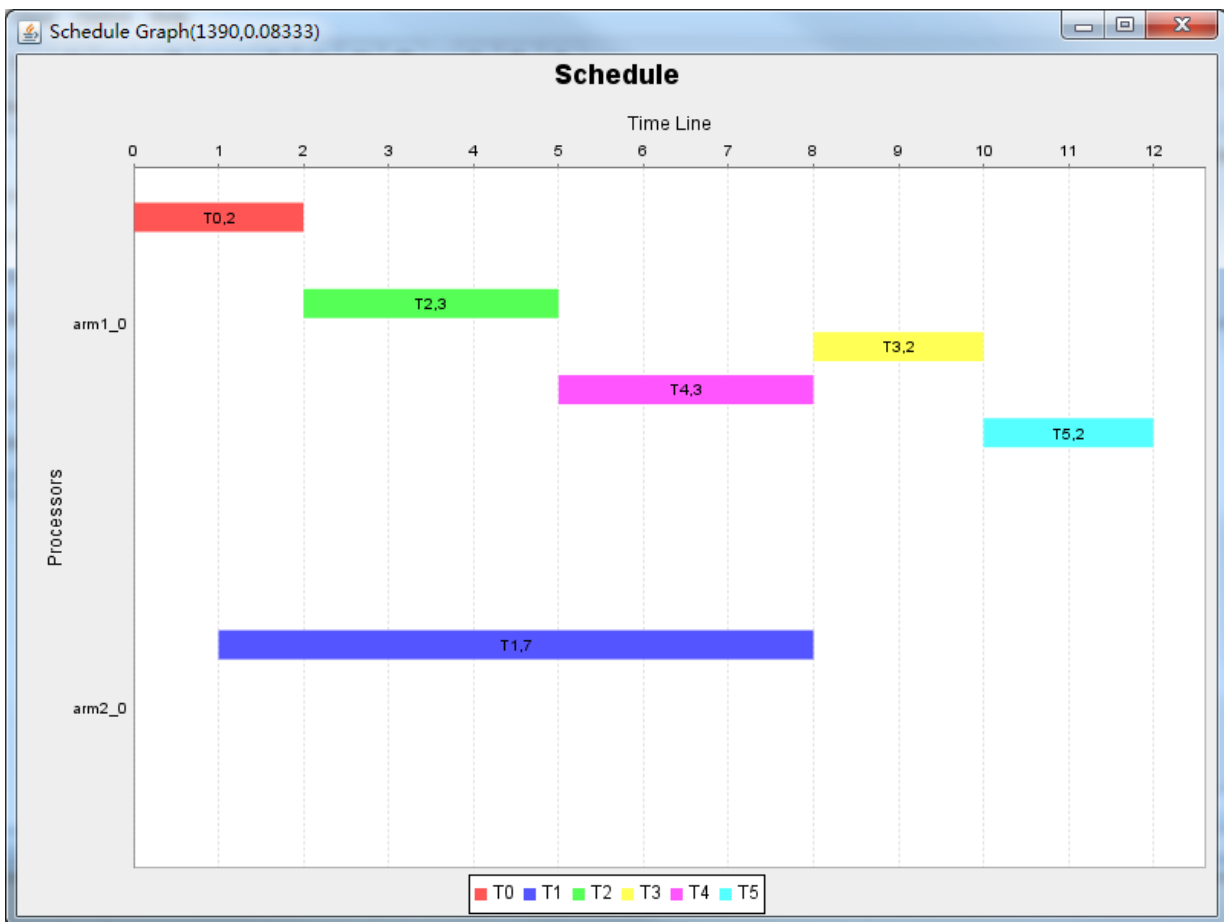

Figure 3. 8   schedule of optimal point

4   Conclusion

iDFOS tool is used to model, analysis, optimal Synchronous Dataflow. It helps designer to design software and hardware of system.

5   Note