

TDT4295 Computer Design Project

Assignment Text

2010

Task: Construct a data-flow computer

In a dataflow architecture, operations are executed when its input data is ready [1]. To achieve this, programs are normally represented as directed graphs where each node is an operation. Notable examples of such architectures are the Manchester Dataflow Computer [2] and the MIT Tagged-Token Dataflow Architecture [3].

The task is to design a simple data-flow computer. The group is free to choose their computer architecture. The system should be demonstrated to work with a suitable application.

Additional requirements

The unit must utilize an Atmel AVR micro controller and a Xilinx FPGA/CPLD. The budget is 23.000NOK, which must cover components and PCB production. The unit design must adhere to the limits set by the course staff at any given time. Deadlines are given in a separate time schedule.

Evaluation

The project is evaluated by an external examiner based on the project report and an oral presentation of the work as well as a prototype demonstration. One grade will be given to the group as a whole, unless there are significant variations in the amount of effort put into the project.

References

1. Wikipedia; Dataflow Architecture; http://en.wikipedia.org/wiki/Dataflow_architecture
2. The Manchester Prototype Dataflow Computer; Gurd, Kirkham and Watson; Communications of the ACM; 1985
3. Executing a Program on the MIT Tagged-Token Dataflow Architecture; Arvind and Nikhil; IEEE Transactions on Computers; Volume 39; Issue 3; 300-318; 1990