

Kennismaking met SystemC en het mmMIPS model

Sander Stuijk

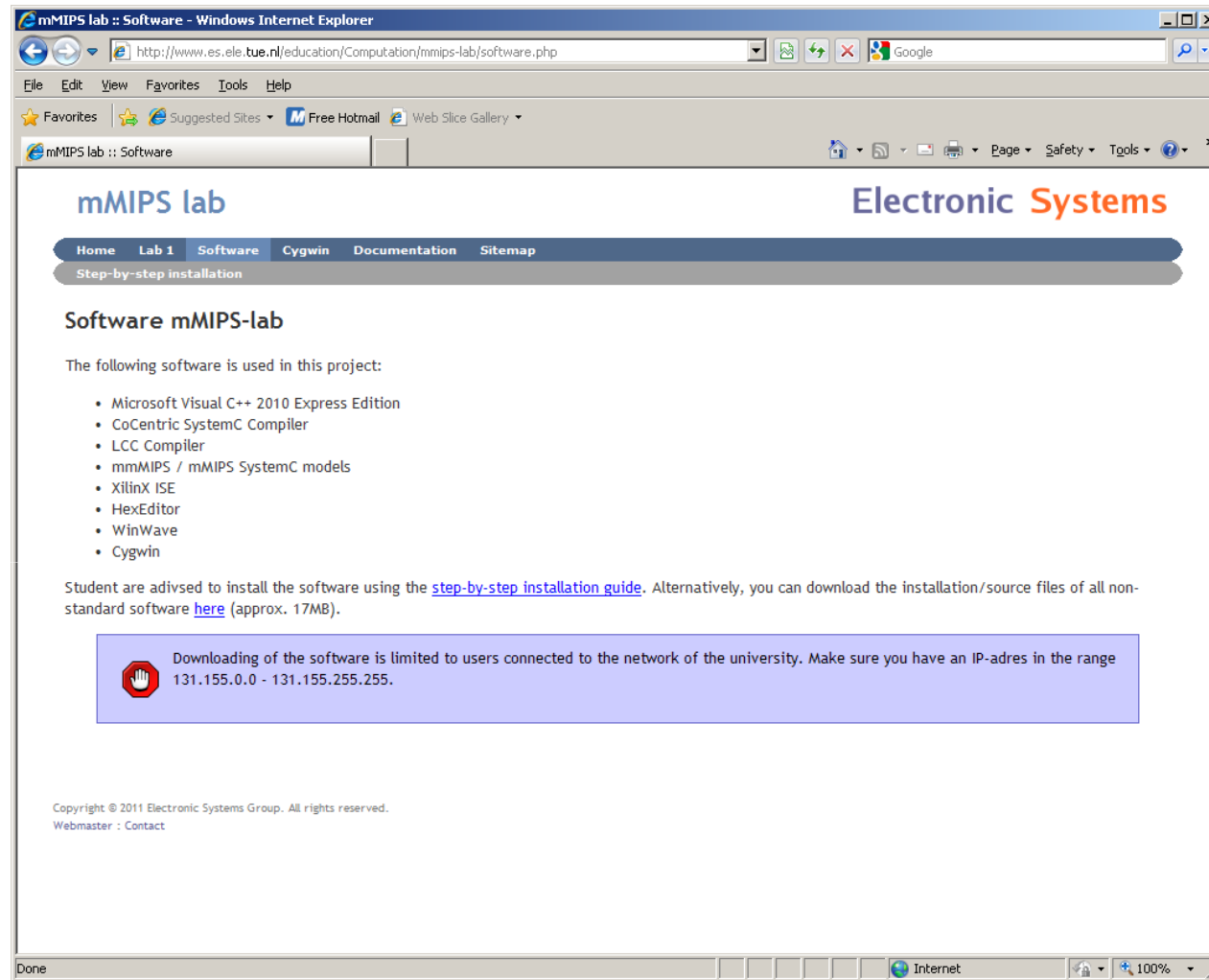
Department of Electrical Engineering
Electronic Systems



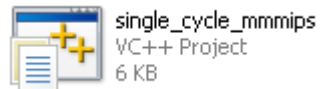
- mMIPS practicum
 - single-cycle mini-mini MIPS (lab 1)
 - multi-cycle mini-mini MIPS (lab 2)
 - pipelined mini-mini MIPS (lab 3)
 - pipelined mini MIPS (lab 4)
 - synthese traject (lab 5)

- mMIPS opdracht (individueel)

- OO2 gebruikt de mMIPS processor



www.es.ele.tue.nl/education/5JJ55-65/mmips-lab/software, blokdiagrammen, opdrachten, etc...



d:\mmips\mips\single_cycle_mmmips\

```

#include "add.h"
#include "aluctrl.h"
#include "alu.h"
#include "and.h"
#include "ctrl.h"
#include "decoder.h"
#include "mux.h"
#include "ram.h"
#include "rom.h"
#include "registerfile.h"
#include "register.h"
#include "shift.h"
#include "signextend.h"

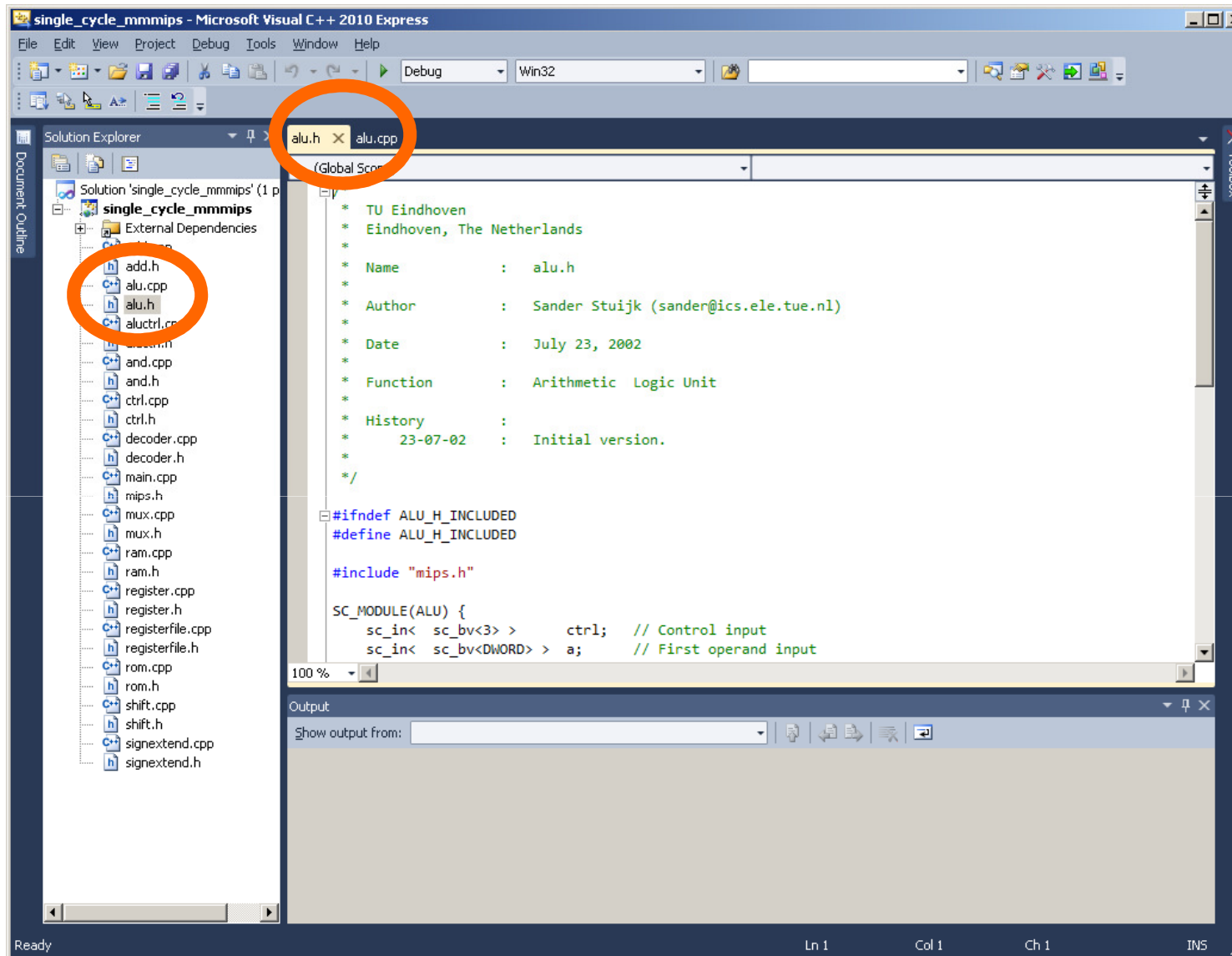
int sc_main(int argc, char *argv[])
{
    /*
     * SIGNALS
     */
    // Data signals
    sc_signal< sc_bv<DWORD> > bus_mux1;
    sc_signal< sc_bv<DWORD> > bus_mux2;
}

```

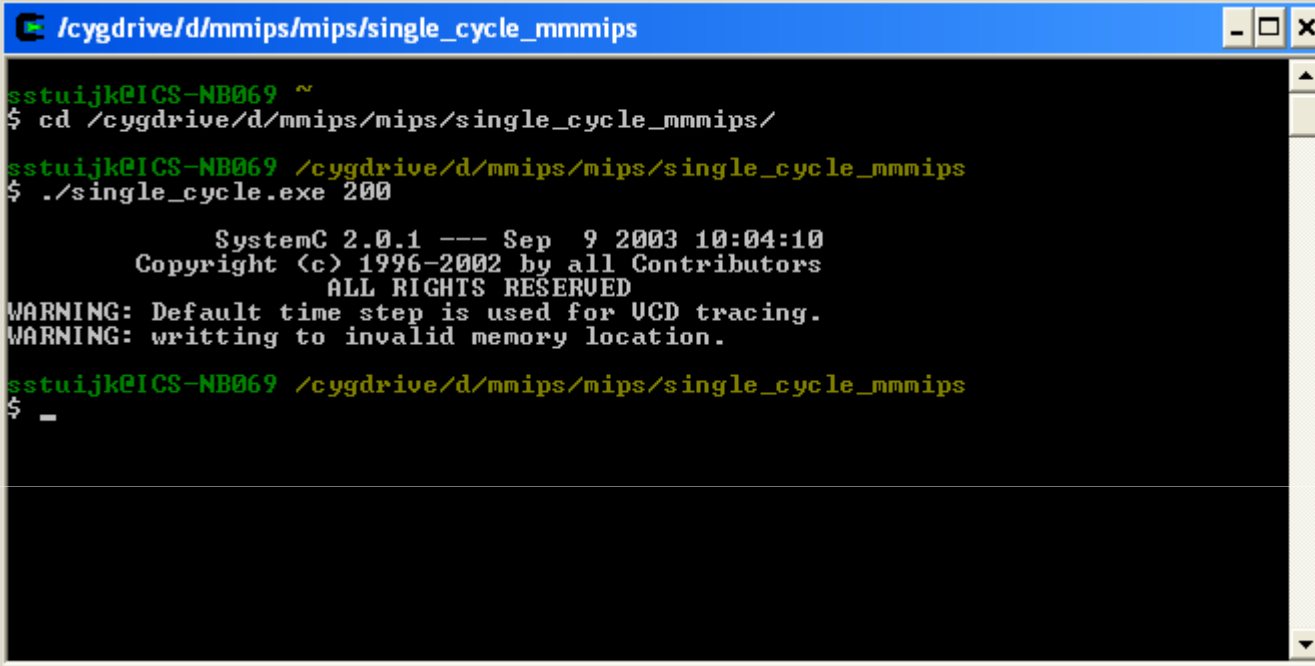
- declaratie
 - signalen
 - modules
 - connecties

- tracing

- simulatie



- voor ieder type module is er een <module>.cpp/<module>.h bestand



```

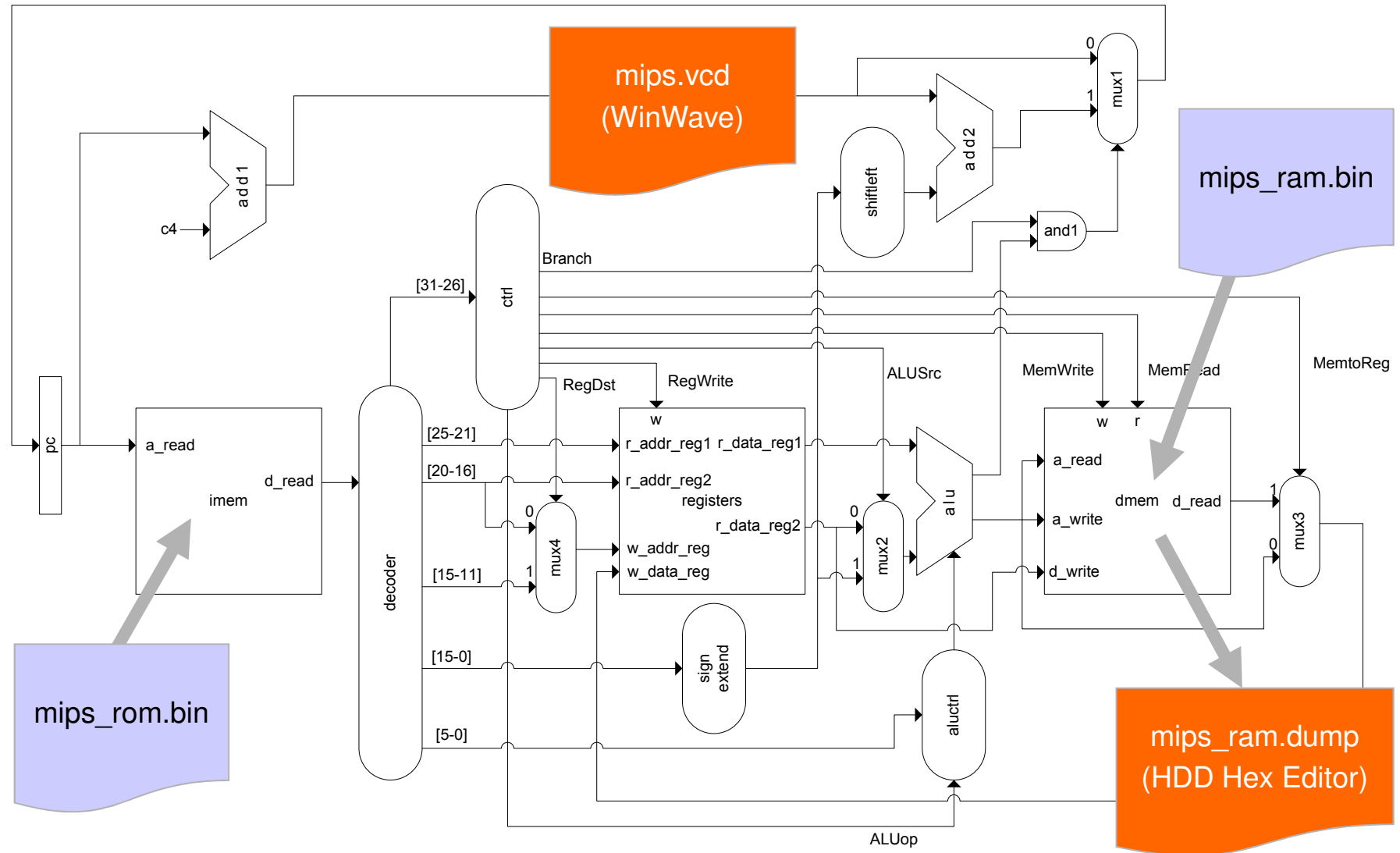
/cygdrive/d/mmips/mips/single_cycle_mmmips
sstuijk@ICS-NB069 ~
$ cd /cygdrive/d/mmips/mips/single_cycle_mmmips/
sstuijk@ICS-NB069 /cygdrive/d/mmips/mips/single_cycle_mmmips
$ ./single_cycle.exe 200

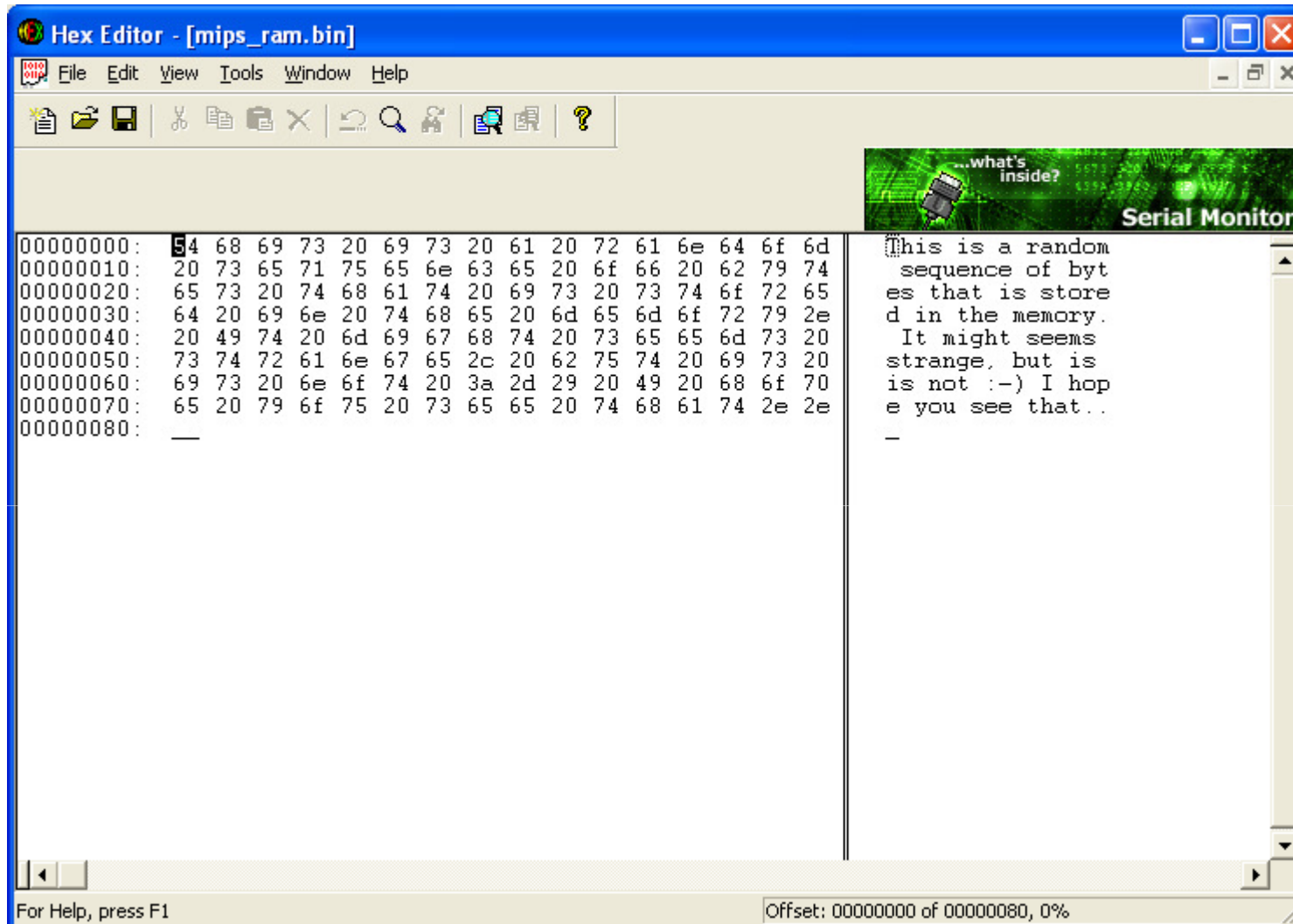
      SystemC 2.0.1 --- Sep  9 2003 10:04:10
      Copyright (c) 1996-2002 by all Contributors
      ALL RIGHTS RESERVED
WARNING: Default time step is used for UCD tracing.
WARNING: writting to invalid memory location.

sstuijk@ICS-NB069 /cygdrive/d/mmips/mips/single_cycle_mmmips
$ _

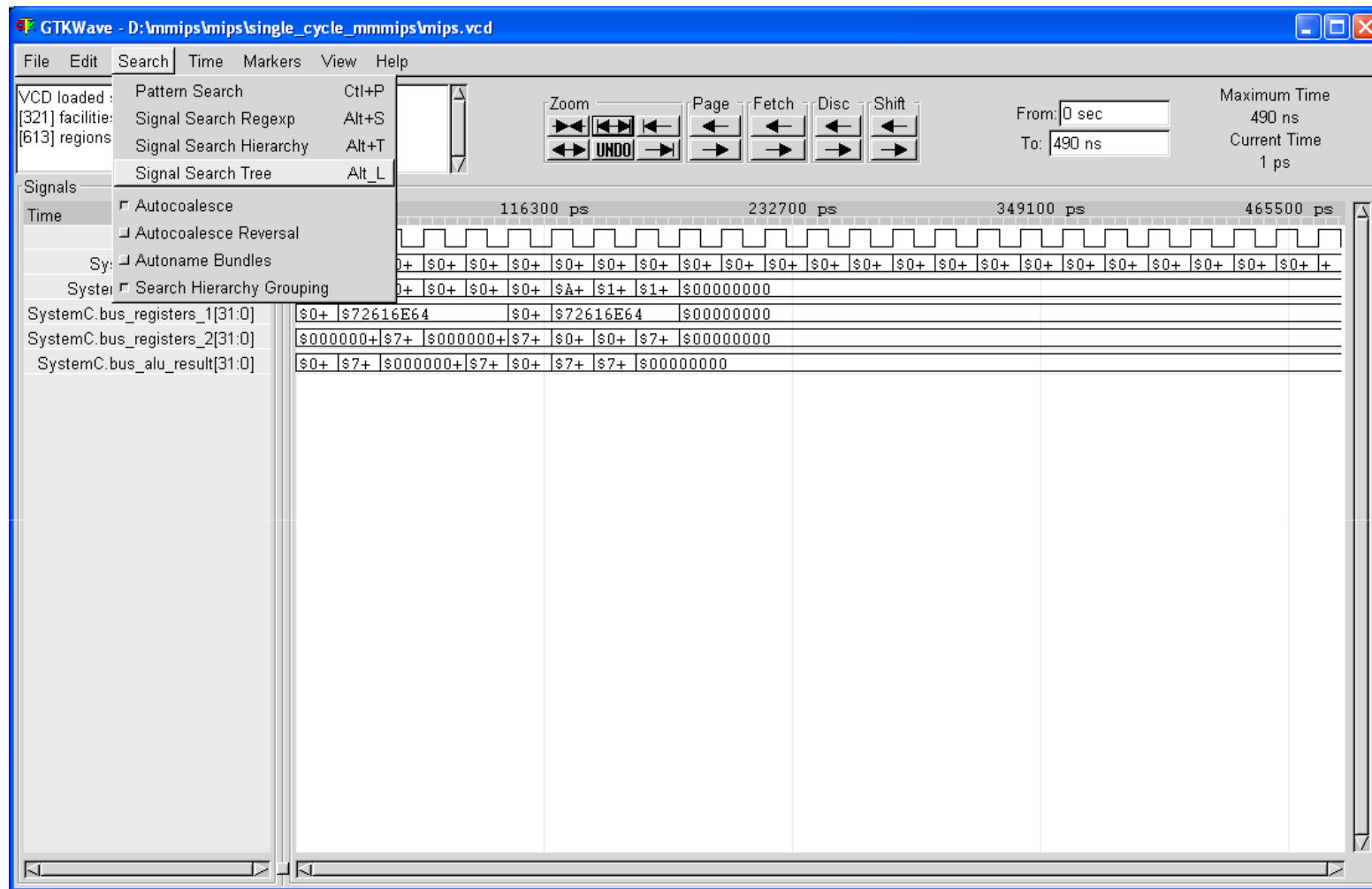
```

- disassembleren mmMIPS binaries
- simuleren van het mmMIPS SystemC model





- binary bestanden bekijken en bewerken



- bestuderen van de wave forms
- voeg signalen toe via 'Search', 'Signal Search Tree'

- opdracht 1
 - simulatie van het programma dat $a=b+c-d$ berekent

- opdracht 2
 - simulatie van het programma dat $a=(b+c)*d$ berekent

- opdracht 3
 - uitbreiding van de mmMIPS met special instructie