UNIVERSITY OF BATANGAS – LIPA CAMPUS

COLLEGE OF ENGINEERING AND ARCHITECTURE

COMPUTER ENGINEERING

Boolean Algebra with Minterms and Maxterms

Experiment #3

Hardware Description Language

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PROFESSOR

Output Screenshot:

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Command Prompt                                                    —    □    ×

Microsoft Windows [Version 10.0.19045.2364]
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C:\Users\pamvm>cd..

C:\Users>cd..

C:\>dir
 Volume in drive C has no label.
 Volume Serial Number is D865-B202

 Directory of C:\

01/07/2022  03:45 pm    <DIR>          $WINDOWS.~BT
25/09/2022  12:26 pm               30 AVScanner.ini
20/01/2022  01:08 pm    <DIR>          Brother
03/07/2022  06:13 pm    <DIR>          ESD
19/01/2022  11:27 pm    <DIR>          Intel
18/12/2022  06:27 pm    <DIR>          iverilog
07/11/2019  05:14 pm    <DIR>          PerfLogs
07/11/2022  03:29 pm    <DIR>          Program Files
18/12/2022  11:13 am    <DIR>          Program Files (x86)
16/05/2022  11:05 am    <DIR>          Users
15/12/2022  12:50 pm    <DIR>          Windows
               1 File(s)             30 bytes
              10 Dir(s)  134,509,793,280 bytes free

C:\>cd iverilog

C:\iverilog>
```

```
Command Prompt                                                    —    □    ×

C:\iverilog>dir
 Volume in drive C has no label.
 Volume Serial Number is D865-B202

 Directory of C:\iverilog

18/12/2022  06:27 pm    <DIR>          .
18/12/2022  06:27 pm    <DIR>          ..
19/09/2022  08:02 am    <DIR>          bin
18/12/2022  06:07 pm    <DIR>          exercises
09/10/2022  09:43 pm    <DIR>          exp
18/12/2022  08:54 pm    <DIR>          Experiments
19/09/2022  08:02 am    <DIR>          gtkwave
19/09/2022  08:02 am               52 Icarus Verilog.url
25/04/2004  04:52 pm           18,902 icarus.ico
19/09/2022  08:02 am    <DIR>          include
19/09/2022  08:02 am    <DIR>          lib
09/10/2022  08:51 pm    <DIR>          samples
19/09/2022  08:02 am    <DIR>          share
19/09/2022  08:02 am          184,689 unins000.dat
19/09/2022  08:01 am        3,153,063 unins000.exe
               4 File(s)      3,356,706 bytes
              11 Dir(s)  134,508,957,696 bytes free

C:\iverilog>cd Experiments

C:\iverilog\Experiments>dir
 Volume in drive C has no label.
 Volume Serial Number is D865-B202

 Directory of C:\iverilog\Experiments

18/12/2022  08:54 pm    <DIR>          .
18/12/2022  08:54 pm    <DIR>          ..
18/12/2022  06:28 pm              948 Experiment1.v
18/12/2022  08:37 pm            3,233 Experiment2.v
18/12/2022  09:15 pm            3,996 Experiment3.v
18/12/2022  09:16 pm            4,498 Lab3CPE314.vcd
18/12/2022  07:04 pm              848 LabExp1.vcd
18/12/2022  08:37 pm            1,812 LabExp2.vcd
18/12/2022  09:15 pm           23,321 test
               7 File(s)         38,656 bytes
               2 Dir(s)  134,508,957,696 bytes free
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                2 Dir(s)  134,508,957,696 bytes free

C:\iverilog\Experiments>iverilog -o test Experiment3.v

C:\iverilog\Experiments>vvp test
VCD info: dumpfile Lab3CPE314.vcd opened for output.

Part1 Minterm: !A!B + !BC + B!C
a=0, b=0, c=0 : out=1
a=0, b=0, c=1 : out=1
a=0, b=1, c=0 : out=1
a=0, b=1, c=1 : out=0
a=1, b=0, c=0 : out=0
a=1, b=0, c=1 : out=1
a=1, b=1, c=0 : out=1
a=1, b=1, c=1 : out=0

Part1 Maxterm: (!A+B+C)(!B+!C)
a=0, b=0, c=0 : out=1
a=0, b=0, c=1 : out=1
a=0, b=1, c=0 : out=1
a=0, b=1, c=1 : out=0
a=1, b=0, c=0 : out=0
a=1, b=0, c=1 : out=1
a=1, b=1, c=0 : out=1
a=1, b=1, c=1 : out=0

Part2 Minterm: !A!C!B+!ADB+!AD!C+A!BCD+AB!C
a=0, b=0, c=0, d=0 : out=1
a=0, b=0, c=0, d=1 : out=1
a=0, b=0, c=1, d=0 : out=0
a=0, b=0, c=1, d=1 : out=0
a=0, b=1, c=0, d=0 : out=0
a=0, b=1, c=0, d=1 : out=1
a=0, b=1, c=1, d=0 : out=0
a=0, b=1, c=1, d=1 : out=1
a=1, b=0, c=0, d=0 : out=0
a=1, b=0, c=0, d=1 : out=0
a=1, b=0, c=1, d=0 : out=0
a=1, b=0, c=1, d=1 : out=1
a=1, b=1, c=0, d=0 : out=1
a=1, b=1, c=0, d=1 : out=1
a=1, b=1, c=1, d=0 : out=0
```
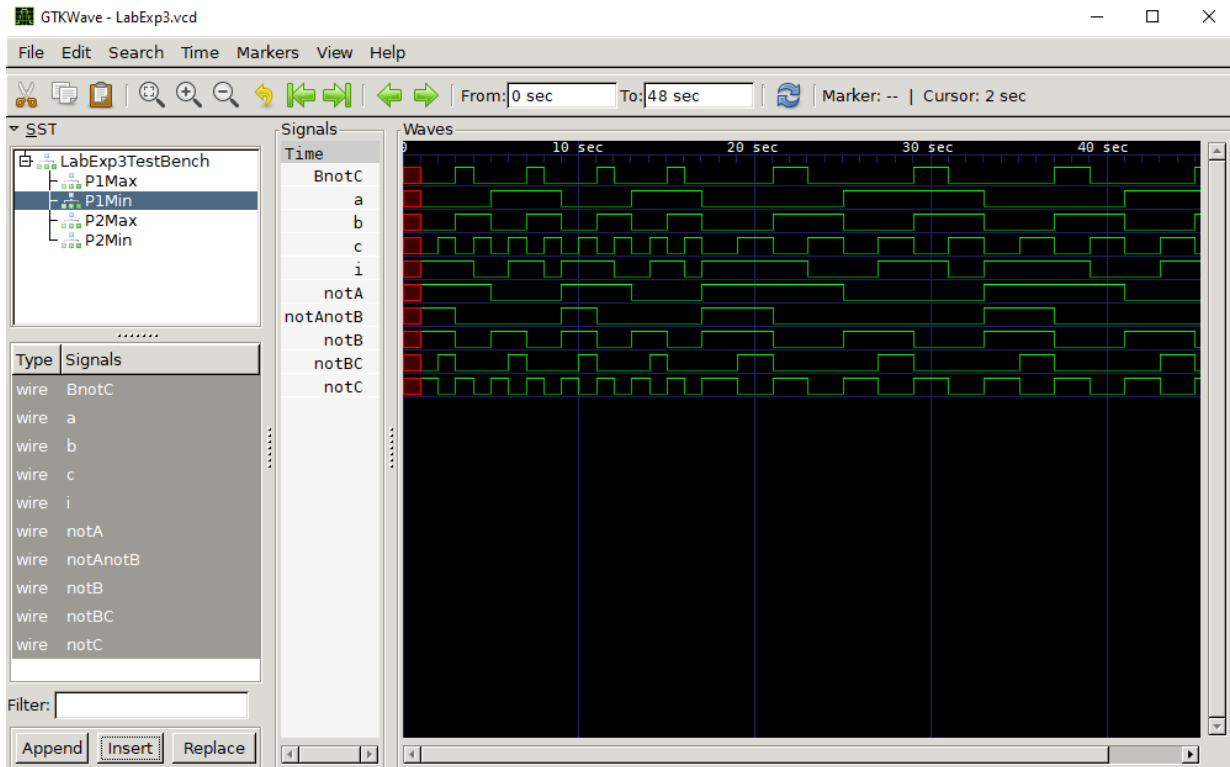
```
Part2 Maxterm: (!A+!B+!C)(!A+B+C)(A+!B+D)(A+B+!C)(!C+D)
a=0, b=0, c=0, d=0 : out=1
a=0, b=0, c=0, d=1 : out=1
a=0, b=0, c=1, d=0 : out=0
a=0, b=0, c=1, d=1 : out=0
a=0, b=1, c=0, d=0 : out=0
a=0, b=1, c=0, d=1 : out=1
a=0, b=1, c=1, d=0 : out=0
a=0, b=1, c=1, d=1 : out=1
a=1, b=0, c=0, d=0 : out=0
a=1, b=0, c=0, d=1 : out=0
a=1, b=0, c=1, d=0 : out=0
a=1, b=0, c=1, d=1 : out=1
a=1, b=1, c=0, d=0 : out=1
a=1, b=1, c=0, d=1 : out=1
a=1, b=1, c=1, d=0 : out=0
a=1, b=1, c=1, d=1 : out=0

C:\iverilog\Experiments>
```
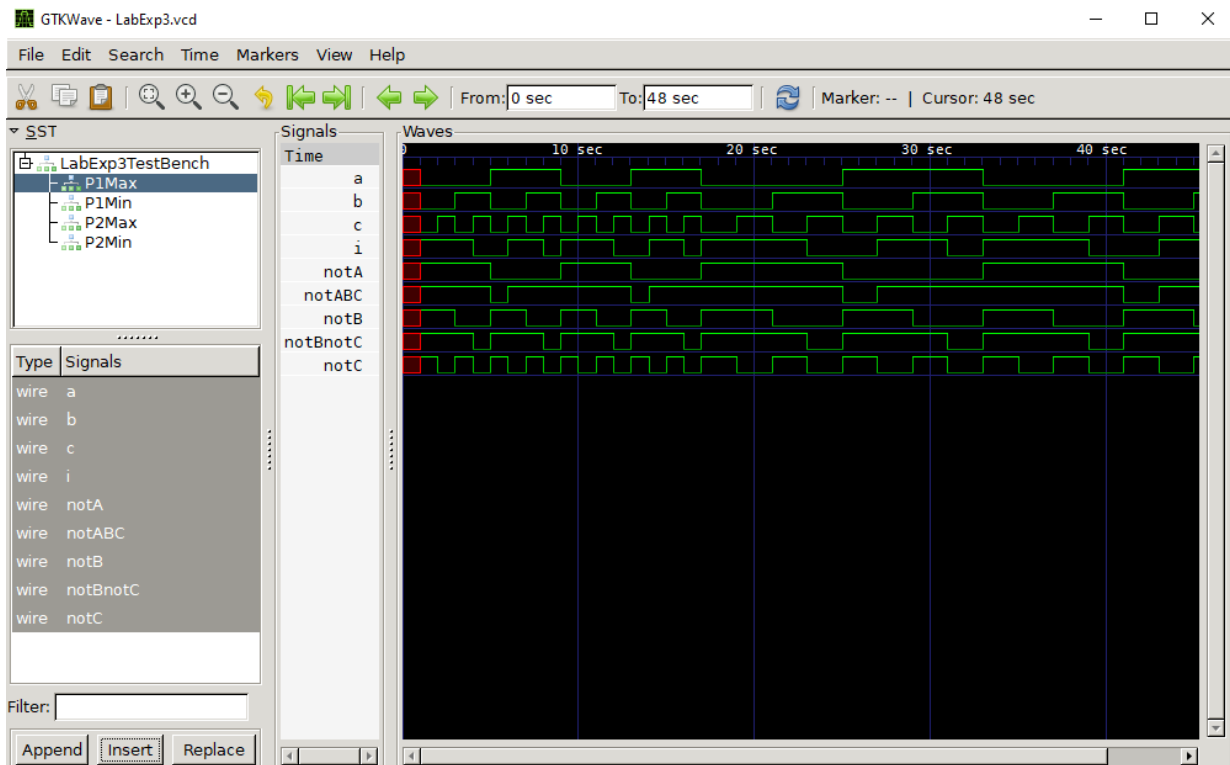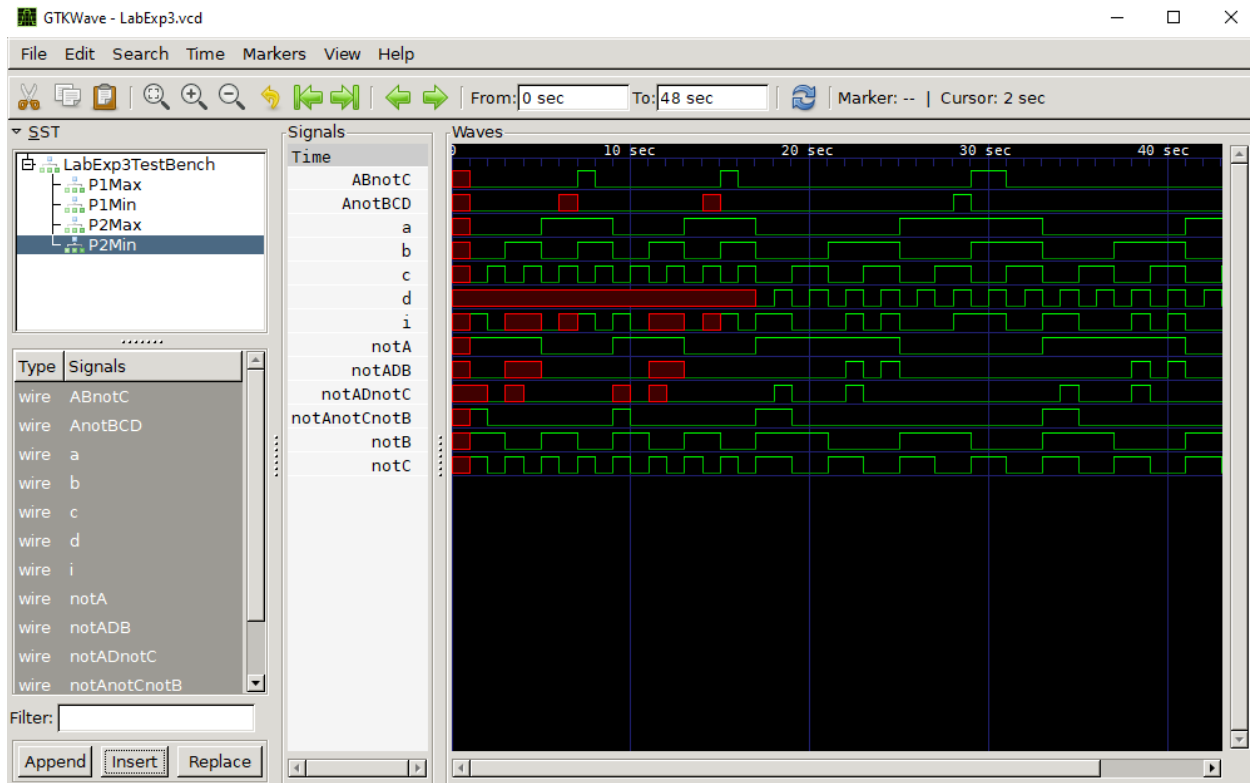
Computer Engineering - CP317L

GTKwave:

Part 1 Minterm

Part 1 Maxterm

Part 2 Minterm

Part 2 Maxterm