



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi | Affiliated to Anna University, Chennai | Accredited by NAAC)

Dindigul – Palani Highway, Dindigul – 624 002

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VAC

On

VLSI Design Tools-Verilog and VHDL



Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (MUS),
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CIRCULAR

08.01.2020

Department of ECE has planned to conduct Value Added Course for III year students in the title “**VLSI Design Tools-Verilog and VHDL**” from 11.01.2020 onwards. The main objective of this course involves imparting skills and knowledge related to digital design, hardware description languages, and the implementation of digital circuits.. All the students are asked to attend the course without fail and get benefitted

S. Karthigai
8/1/20
HoD/ECE

Dr.S.Karthigai Lakshmi, Prof/ECE



Dr.D.Senthil Kumar

Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (MUS),
Principal

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Value added Course on "VLSI design Tools-Verilog and VHDL"

Date : 11.01.2020 to 28.03.2020

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S. Karthiga
HOD/ECE

Dr.S. KARTHIGA LAKSHMI
Professor & Head
Department of ECE
SSM Institute of Engg & Tech
Dindigul - 624 002



Dr.D. Senthil Kumar
Principal

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Dr.D. Senthil Kumar

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Date :11.01.2020 to 28.03.2020

Syllabus content

1. Introduction to VLSI
2. Introduction to Chip Fabrication
3. About VLSI Design flow
4. VLSI Tool –Verilog Introduction
5. Logical Operators and syntax in Verilog
6. VHDL Introduction
7. Hands on Verilog coding
8. Design of digital logic circuits using Verilog and VHDL



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Value Added Course Summary 2019-2020

Course Name: VLSI Design tools-Verilog and VHDL

Course Duration: 30 hours

Year Offered: 2019-2020

Course Instructors: Mrs.M.Jeyalakshmi,AP/ECE
Mr.S.R.Ashok Kumar
SSMIET,Dindigul

Course Outcome:

On completion of the course, students will be able to understand the process of circuit synthesis, converting high-level descriptions into gate-level or transistor-level representations and gain hands-on experience with Register-Transfer Level (RTL) coding using Verilog and VHDL for describing the behavior of digital systems.

Course Type: Self Framed

Assessment Mode

Attendance: 30 hours

Number of Participants: 40

Scheme of Exam: MCQ



Course Co-ordinators

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HoD/ECE



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Email: ssmietdgl@gmail.com Website: www.ssmiet.ac.in


Department of Electronics and Communication Engineering

VAC on “VLSI Desig Tools-Verilog and VHDL”

Students Namelist

S.No	Register number	Name of the Student
1.	922117106041	KAARTHIC SHANKAR S
2.	922117106042	KALAIARASAN S
3.	922117106043	KARTHIK A
4.	922117106044	KARTHIKEYAN N
5.	922117106045	KAVIYA K
6.	922117106046	KOSHIKHA B
7.	922117106047	LAKSHMI S
8.	922117106048	LAVANYA J
9.	922117106049	LOGA DHARSINI A
10.	922117106050	MANIRAJA P
11.	922117106051	MARUTHARASU V
12.	922117106052	MATHISELVAN R
13.	922117106053	MITHUNAVARSHINI D S
14.	922117106054	MOHAMED IMRAN T
15.	922117106055	MONICA P M
16.	922117106056	MOUNIKA M
17.	922117106057	NAGALAKSHMI N
18.	922117106058	NAGARAJ M
19.	922117106059	NAMPERUMAL M




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20.	922117106060	NANDHA KUMAR M
21.	922117106061	NANDHINI P
22.	922117106062	NAVANEETHA KRISHNAN J
23.	922117106063	NIVETHA V
24.	922117106064	NIVETHITHA T
25.	922117106065	OVIYA S
26.	922117106066	PADMA BHAGAVATHI S A
27.	922117106067	PANDIARAJAN S
28.	922117106068	PARALOGA SELVI I
29.	922117106069	PRABHU M
30.	922117106070	PRADEEPA M
31.	922117106071	PRADEEP RAJA S
32.	922117106072	PRAKASH S
33.	922117106073	PRASANNA M
34.	922117106074	PRAVEEN K
35.	922117106075	PRIYADHARSHINI P (02-02-2000)
36.	922117106076	PRIYADHARSHINI P (10-08-2000)
37.	922117106077	PRIYADHARSHINI R (06-09-1999)
38.	922117106078	RAJALAKSHMI M
39.	922117106079	RAJKUMAR K
40.	18LEECE03	VISHNU B

1.M.Jeyalakshmi , AP/ECE

2.S.R.Ashok Kumar/AP/ECE

Faculty Incharges

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14	922117106054	MOHAMED IMRAN T	Mohamed Imran T
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19	922117106059	NAMPERUMAL M	Namperumal m
20	922117106060	NANDHA KUMAR M	Nandha
21	922117106061	NANDHINI P	Nandhini p
22	922117106062	NAVANEETHA KRISHNAN J	Navaneetha
23	922117106063	NIVETHA V	Nivetha v
24	922117106064	NIVETHITHA T	P. Nivethitha
25	922117106065	OVIYA S	Oviya s
26	922117106066	PADMA BHAGAVATHI S A	Padma
27	922117106067	PANDIARAJAN S	Pandiarajan
28	922117106068	PARALOGA SELVI I	Paraloga Selvi
29	922117106069	PRABHU M	Prabhu
30	922117106070	PRADEEPA M	M. Pradeepa
31	922117106071	PRADEEP RAJA S	Pradeep
32	922117106072	PRAKASH S	Prakash
33	922117106073	PRASANNA M	Prasanna
34	922117106074	PRAVEEN K	Praveen k
35	922117106075	PRIYADHARSHINI P (02-02-2000)	P. Priyadharshini
36	922117106076	PRIYADHARSHINI P (10-08-2000)	P. Priyadharshini
37	922117106077	PRIYADHARSHINI R (06-09-1999)	P. Priyadharshini
38	922117106078	RAJALAKSHMI M	Rajalakshmi
39	922117106079	RAJKUMAR K	Rajkumar
40	18LEECE03	VISHNU B	Vishnu B



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HOD/ECE

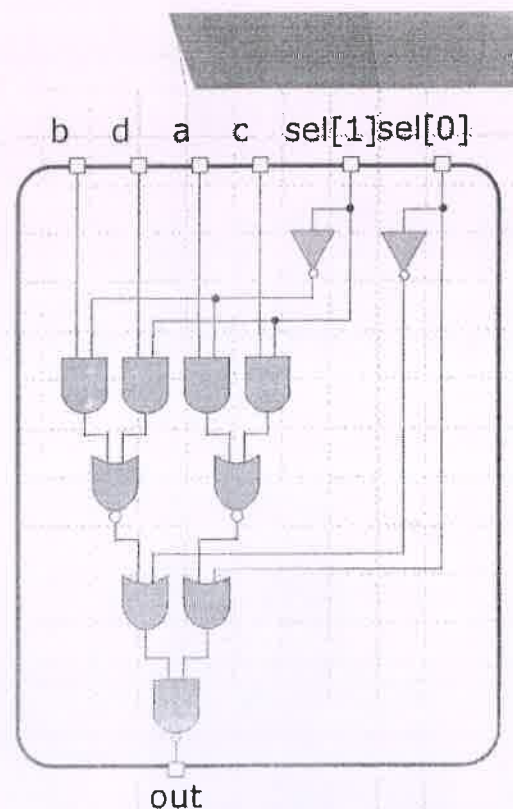
MUX 4 : GATE LEVEL DESIGNING

```

module mux4(input a,b,c,d, input[1:0] sel, output out);
wire[1:0] sel_b;
not not0( sel_b[0], sel[0] );
not not1( sel_b[1], sel[1] );
wire n0, n1, n2, n3;
and and0( n0, c, sel[1] );
and and1( n1, a, sel_b[1] );
and and2( n2, d, sel[1] );
and and3( n3, b, sel_b[1] );
wire x0, x1;
nor nor0( x0, n0, n1 );
nor nor1( x1, n2, n3 );
wire y0, y1;
or or0( y0, x0, sel[0] );
or or1( y1, x1, sel_b[0] );
nand nand0( out, y0, y1 );
endmodule

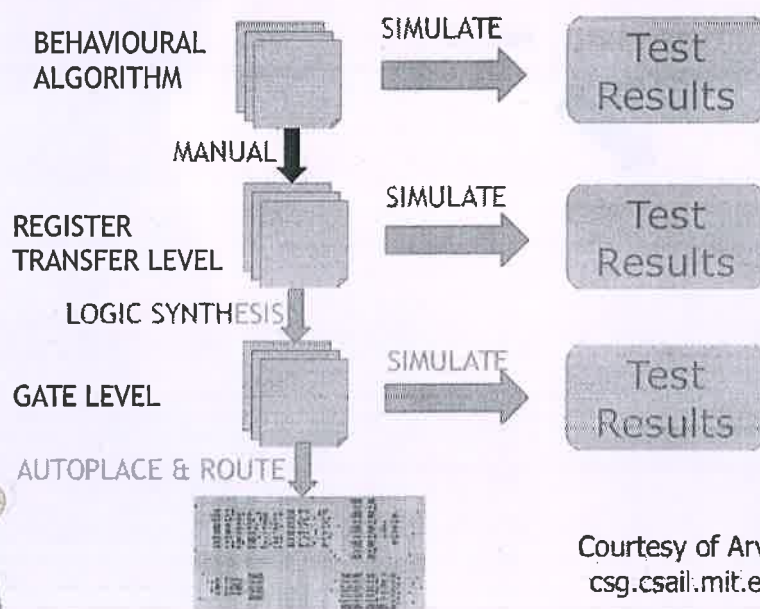
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Courtesy of Arvind <http://csg.csail.mit.edu/6.375/>



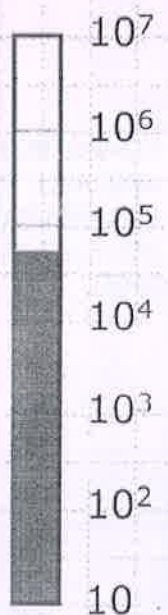

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HDLs LED TO TOOLS FOR AUTOMATIC TRANSLATION



Courtesy of Arvind <http://csg.csail.mit.edu/6.375/>

Number of Gates in Design

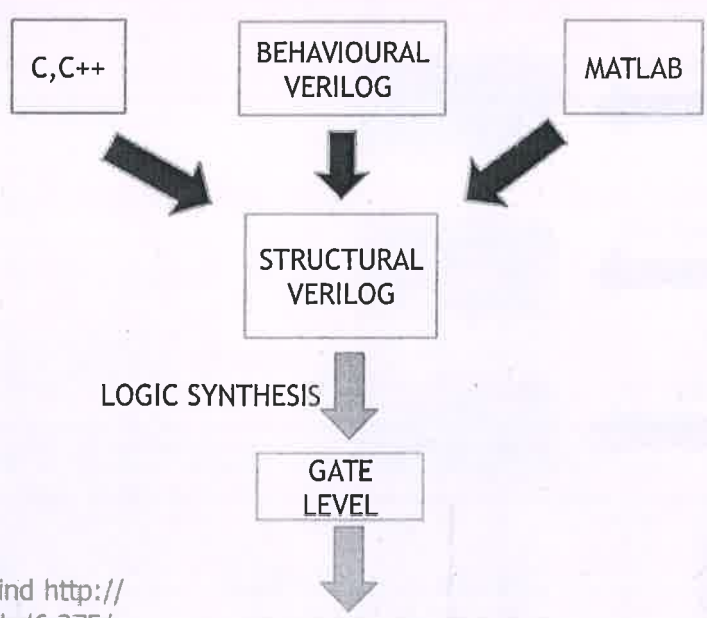


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THE CURRENT SITUATION

COMPILERS ARE NOT AVAILABLE TO CONVERT BEHAVIOURAL LEVEL TO REGISTER TRANSFER LEVEL



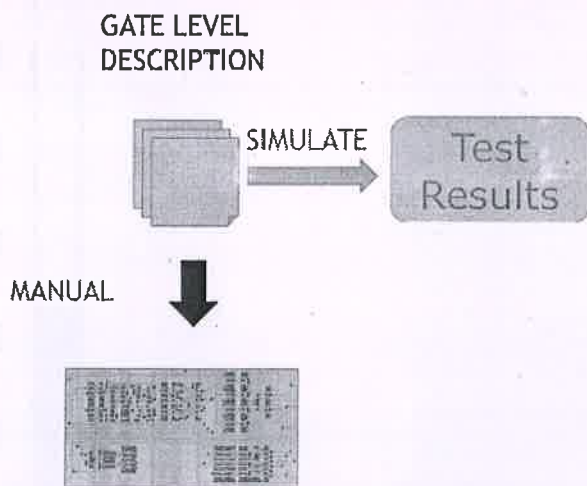
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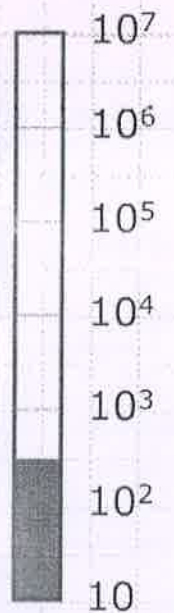
Dr.D.

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HDLs ENABLED LOGIC LEVEL SIMULATION AND TESTING



Number of Gates in Design



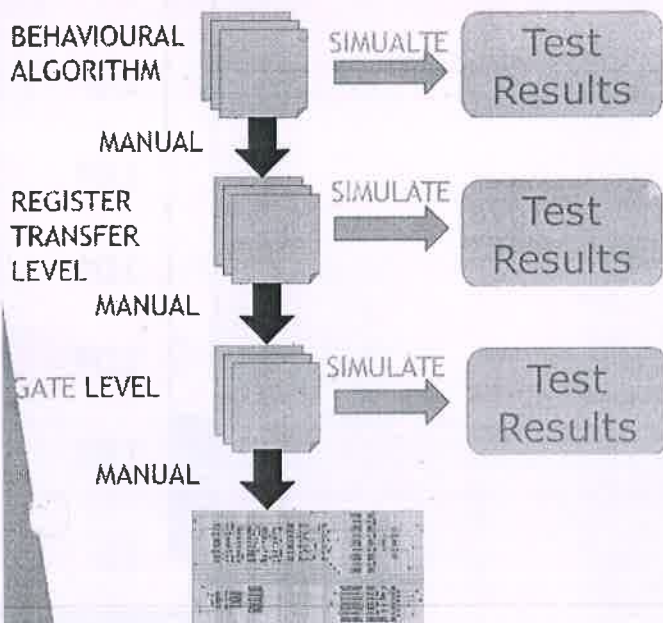
Courtesy of Arvind <http://csg.csail.mit.edu/6.375/>

Dr. D. Senthil Kumaran



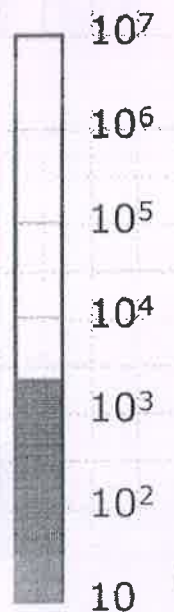
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THEN DESIGNERS BEGAN TO USE HDLs FOR HIGHER LEVEL DESIGN



Courtesy of Arvind <http://csg.csail.mit.edu/6.375/>

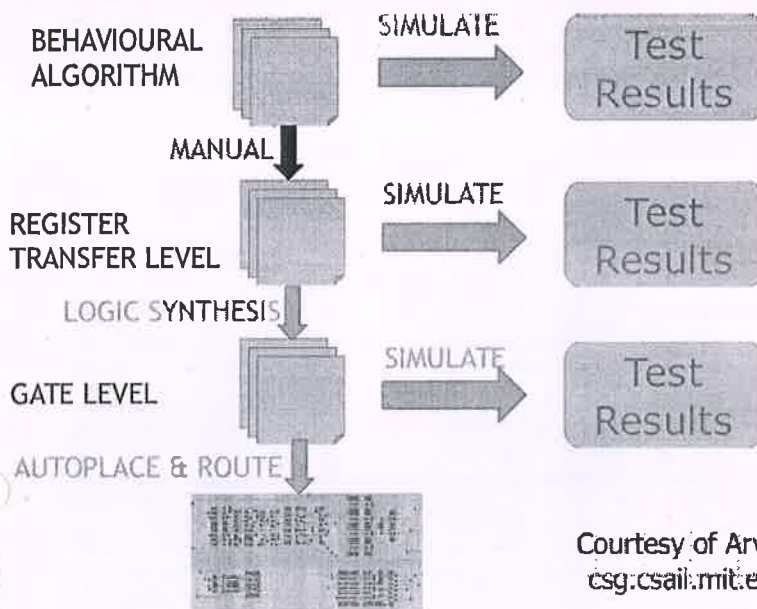
Number of Gates
in Design



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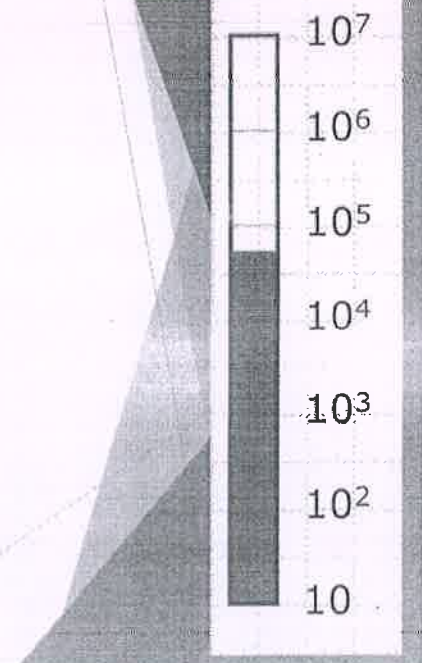
7

HDLs LED TO TOOLS FOR AUTOMATIC TRANSLATION



Courtesy of Arvind <http://csg.csail.mit.edu/6.375/>

Number of Gates in Design



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Value added Course on "VLSI design Tools-Verilog and VHDL"

Date :11.01.2020 to 28.03.2020

ASSESSMENT QUESTIONS

1. The Verilog is a hardware description language (3 marks)
 - a) Hardware decision language
 - b) Hardware description language
 - c) Software Description language

2. _____ is a superset of Verilog. (3 marks)
 - a) Verilog.
 - b) System verilog
 - c) System VHDL

3. The Verilog offers more features than the VHDL. (3 marks)
 - a) Yes
 - b) No

4. Operator which precedes the operand is known as (3 marks)
 - a) Unary
 - b) Binary
 - c) Ternary
 - d) None of the above

5. The wait statement is (3 marks)
 - a) Level sensitive
 - b) Edge sensitive
 - c) Both
 - d) None

Name : Vignu . B



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Date : 11.01.2020 to 28.03.2020

ASSESSMENT QUESTIONS

Name: Vignesh

1. The Verilog is a hardware description language (3 marks)

- a) Hardware decision language
- ☒ b) Hardware description language
- c) Software Description language

2. ^{System}Verilog is a superset of Verilog. (3 marks)

- ☒ a) Verilog.
- ☒ b) System verilog
- c) System VHDL

3. The Verilog offers more features than the VHDL. (3 marks)

- ☒ a) Yes
- b) No

4. Operator which precedes the operand is known as (3 marks)

- a) Unary
- ☒ b) Binary
- c) Ternary
- d) None of the above

5. The wait statement is (3 marks)

- a) Level sensitive
- b) Edge sensitive
- ☒ c) Both
- d) None

[Handwritten signature]

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Vignesh



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Assessment Marksheet

S.No.	Reg. No.	Name of the Student	Marks
1	922117106041	KAARTHIC SHANKAR S	15
2	922117106042	KALAIARASAN S	15
3	922117106043	KARTHIK A	15
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5	922117106045	KAVIYA K	15
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FEEDBACK FORM

Name of the Participant: **Vishnu B**

Year/Sem :

S.No	Question	Excellent	Good	Satisfactory
1	Did the VAC enlighten your mind	✓		
2	Whether your expectation gets satisfied		✓	
3	Whether the session was interactive	✓		
4	Knowledge gained from this VAC is		✓	
5	Was the VAC well organized	✓		

Comments on session:

Signature of the Participant



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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FEEDBACK FORM

Name of the Participant: **Rajkumar. K**

Year/Sem :

S.No	Question	Excellent	Good	Satisfactory
1	Did the VAC enlighten your mind	✓		
2	Whether your expectation gets satisfied		✓	
3	Whether the session was interactive	✓		
4	Knowledge gained from this VAC is	✓		
5	Was the VAC well organized	✓		

Comments on session:

Good

Signature of the Participant



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FEEDBACK FORM

Name of the Participant: *Prabhu. M*
Year/Sem :

S.No	Question	Excellent	Good	Satisfactory
1	Did the VAC enlighten your mind	✓		
2	Whether your expectation gets satisfied	✓		
3	Whether the session was interactive	✓		
4	Knowledge gained from this VAC is		✓	
5	Was the VAC well organized		✓	

Comments on session:

Prabhu. M
Signature of the Participant



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VAC on "VLSI Desig Tools-Verilog and VHDL"

11/01/2020 To 28/03/2020

FEEDBACK FORM

Name of the Participant: *Lavanya. S*
Year/Sem :

S.No	Question	Excellent	Good	Satisfactory
1	Did the VAC enlighten your mind		✓	
2	Whether your expectation gets satisfied	✓		
3	Whether the session was interactive		✓	
4	Knowledge gained from this VAC is		✓	
5	Was the VAC well organized	✓		

Comments on session:

Lavanya. S
Signature of the Participant



Dr. D. Senthil Kumar
**Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (MUS).
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Kuttathupatti Village, Sindalagundu (Po),
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VAC on "VLSI Desig Tools-Verilog and VHDL"

11/01/2020 To 28/03/2020

FEEDBACK FORM

Name of the Participant: Karthik. A
Year/Sem : _____

S.No	Question	Excellent	Good	Satisfactory
1	Did the VAC enlighten your mind	✓		
2	Whether your expectation gets satisfied	✓	✓	
3	Whether the session was interactive	✓		
4	Knowledge gained from this VAC is	✓		
5	Was the VAC well organized	✓		

Comments on session:

Nil

[Signature]
Signature of the Participant



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VAC on "VLSI Desig Tools-Verilog and VHDL"

11/01/2020 To 28/03/2020

FEEDBACK FORM

Name of the Participant: Oviya S
Year/Sem : _____

S.No	Question	Excellent	Good	Satisfactory
1	Did the VAC enlighten your mind	✓		
2	Whether your expectation gets satisfied	✓		
3	Whether the session was interactive		✓	
4	Knowledge gained from this VAC is	✓		
5	Was the VAC well organized	✓		

Comments on session:

informative session.

[Signature]
Signature of the Participant



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19.	922117106059	NAMPERUMAL M	/	/	/
20.	922117106060	NANDHA KUMAR M	/	/	/
21.	922117106061	NANDHINI P	/	AB	/
22.	922117106062	NAVANEETHA KRISHNAN I	/	/	/
23.	922117106063	NIVETHA V	/	/	/
24.	922117106064	NIVETHITHA T	/	/	/
25.	922117106065	OVIYA S	/	/	/
26.	922117106066	PADMA BHAGAVATHI S A	/	/	/
27.	922117106067	PANDIARAJAN S	/	/	/
28.	922117106068	PARALOGA SELVI I	/	/	/
29.	922117106069	PRABHU M	/	/	/
30.	922117106070	PRADEEPA M	/	/	AB
31.	922117106071	PRADEEP RAJA S	/	/	/
32.	922117106072	PRAKASH S	/	/	/
33.	922117106073	PRASANNA M	/	/	/
34.	922117106074	PRAVEEN K	/	/	/
35.	922117106075	PRIYADHARSHINI P (02- 02-2000)	/	/	/
36.	922117106076	PRIYADHARSHINI P (10- 08-2000)	/	/	/
37.	922117106077	PRIYADHARSHINI R (06- 09-1999)	/	/	/
38.	922117106078	RAJALAKSHMI M	/	/	/
39.	922117106079	RAJKUMAR K	/	/	/
40.	18LEECE03	VISHNU B	/	/	/

1.M.Jeyalakshmi , AP/ECE

2.S.R.Ashok Kumar/AP/ECE

Faculty Incharges



[Handwritten signature in green ink]

[Handwritten signature in black ink]
HOD/ECE

DR. S. KARTHIGAI LAKSHMI
Professor & Head
Department of ECE
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VAC on "VLSI Desig Tools-Verilog and VHDL"

11/01/2020 To 28/03/2020

FEEDBACK FORM

Name of the Participant: Monika . M
 Year/Sem : _____

S.No	Question	Excellent	Good	Satisfactory
1	Did the VAC enlighten your mind	✓		
2	Whether your expectation gets satisfied		✓	
3	Whether the session was interactive		✓	
4	Knowledge gained from this VAC is		✓	
5	Was the VAC well organized	✓		

Comments on session:

Nil

Signature of the Participant Monika . M



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VAC on "VLSI Desig Tools-Verilog and VHDL"

11/01/2020 To 28/03/2020

FEEDBACK FORM

Name of the Participant: Manika . M
 Year/Sem : _____

S.No	Question	Excellent	Good	Satisfactory
1	Did the VAC enlighten your mind	✓		
2	Whether your expectation gets satisfied		✓	
3	Whether the session was interactive		✓	
4	Knowledge gained from this VAC is	✓		
5	Was the VAC well organized	✓		

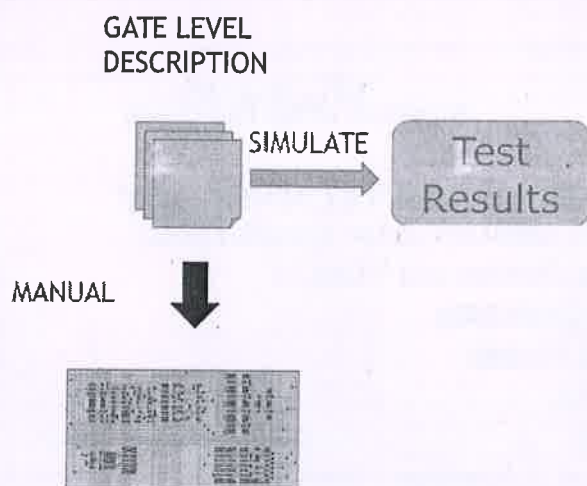
Comments on session:

Signature of the Participant Manika . M



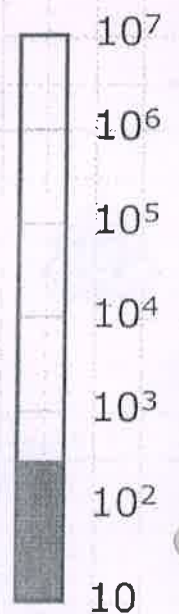
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HDLs ENABLED LOGIC LEVEL SIMULATION AND TESTING



Courtesy of Arvind <http://csg.csail.mit.edu/6.375/>

Number of Gates in Design



Dr. D. Senthil Kumar
Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (MUS).
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CERTIFICATE

THIS CERTIFICATE IS PRESENTED TO

Manica. D.M

Value Added Course on "VLSI Design tools-Verilog and VHDL"

11.01.2020 to
28.03.2020

DATE

Dr.D.Senthil Kumaran
Principal

SIGNATURE

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CERTIFICATE

THIS CERTIFICATE IS PRESENTED TO

Maniraja. P

Value Added Course on "VLSI Design tools-Verilog and VHDL"



11.01.2020 to
28.03.2020

DATE

Dr.D.

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Principal

SIGNATURE