

CoE/EE460 Switching Theory

Lecture 10

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Spring 2001

<http://www.arl.wustl.edu/~lockwood/class/coe460/>

Announcements : Homework

- Homework 3 Due Thursday (Tomorrow) @ 5pm
 - 24-hours from now!
 - Extended due to network outage, 6pm-11pm
 - Solutions Posted 5pm on Thursday

- Homework 4 Due next Thursday

Final Reminder : Exam 1

- Exam 1 : Monday March 5 (in class)
 - Covers:
 - Course Material Though Wed. Feb 28 [Branch & Bound]
 - Textbook, chapters 1,3,4 [Not 5]
 - Homeworks 1-3
 - You may bring (only):
 - Boolean Algebra Theorems & Postulates sheet (on web)
 - Your own 1-page [2 sided] Note sheet
 - You may not bring
 - Textbook
 - This is closed-book exam
 - Computation or communication device
 - Problems will be sufficiently small to work by hand

Announcement: Web-based Message Group

The screenshot shows a Microsoft Internet Explorer browser window displaying a message board. The address bar shows the URL: <http://boards.multicity.com/servlet/BoardView?action=7&boardid=1844290588&msg=58pg=1>. The page title is "<COE 460 Discussion> - Microsoft Internet Explorer". The interface includes a navigation bar with icons for Post, Search, Expand, Moderator, Help, and a Home button. Below the navigation bar, there is a table of messages with the following data:

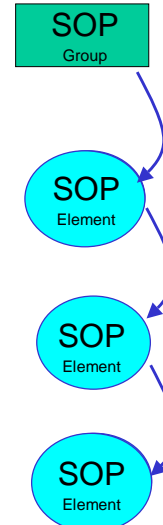
Topic	Replies	Author	Date
Homework 3 Deadline Extension : Thursday at 5pm (24 hours)	1	ProfLockwood	02/27/01 11:41 PM
RE: Homework 3 Deadline Extension : Thursday at 5pm (24 hours)	0	Winie	02/28/01 1:35 PM
Scanning the last line of input	0	ProfLockwood	02/27/01 2:13 PM
Java bit-wise operator	0	ProfLockwood	02/27/01 12:46 AM
Welcome to the new EE460 newsgroup.	0	ProfLockwood	02/27/01 12:38 AM
Welcome to COE 460 Discussion Message Board	0	ProfLockwood	02/27/01 12:27 AM

At the bottom of the page, there is a "Home" button, a "Moderator" link with a user icon, and a link to "Create Your Own FREE Message Board!". The footer of the page reads "MultiBoards Powered by Multicity".

Implementation of Lists and Groups

- Iterating through a group
 - Start at the Head of the list
 - Iterate through each term

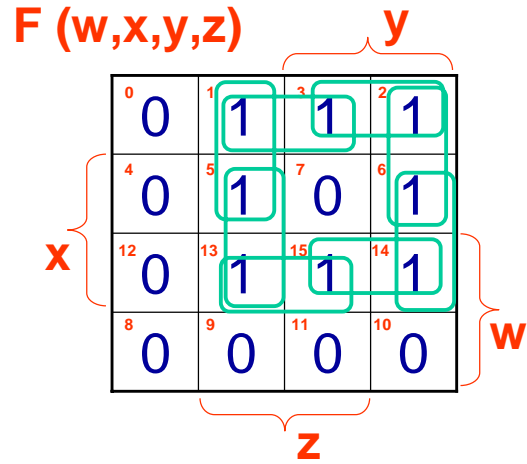
```
~/coe460/mp/mp4
void sop_group::display() {
    sop_term* si = head;
    if (head==NULL)
        return;
    else
        do {
            if (si->is_prime)
                si->display();
            si = si->next;
        } while (si!=NULL);
}
```



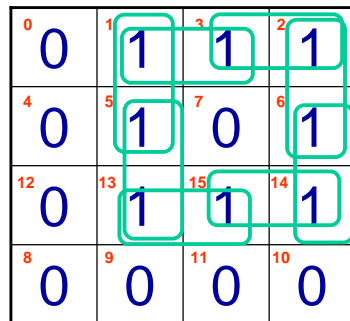
Branch and Bound

- When reduction techniques can no longer reduce a covering matrix, we must pick primes
- Branch and Bound provides a mechanism to limit the search space.
 - Pick a splitting variable (p_i)
 - Estimate Cost function to cover remaining matrix
 - Recurse “good” solutions

Final Result finding Prime Implicants



Branch and Bound Example



Which term(s) are redundant?

	P_1	P_2	P_3	P_4	P_5	P_6	P_7	P_8
M_1	1							1
M_3	1	1						
M_2		1	1					
M_6			1	1				
M_{14}				1	1			
M_{15}					1	1		
M_{13}						1	1	
M_5							1	1

Branch and Bound : Cycles

	P_1	P_2	P_3	P_4	P_5	P_6
M_1	1					1
M_2	1	1				
M_3		1	1			
M_4			1	1		
M_5				1	1	
M_6					1	1

- Choose P_1
 - Splitting
 - Cover M_1, M_2
- Cost, $U=3$
- Eliminate P_2
 - Column Dom
- Eliminate M_4
 - Row Dom
- Choose P_3
- Choose P_5