Excel Logic & the IF Function

- ## Comparison Operators
  - You can use comparison operators to compare two numbers, functions, formulas, or labels and return either true or false.
  - Examples include:
    - =2*3=4+2
    - =A1>0
    - =average(a1:a10)>60

- Every conditional test must include at least one comparison operator. As an example, in the formula =A1>0, the comparison operator is >

Comparison Operators

- The following six comparison operators exist in Excel:

Comparison Operator	Definition
=	Equal to
<>	Not equal to
<	Less than
<=	Less than or equal to
>	Greater than
>=	Greater than or equal to

Built-in IF Function

- The IF function allows our spreadsheet to **make a decision** when analyzing the data.

- The function asks the question: Is some condition true or false?

- If the condition is true, the function returns one value; if the condition is false, the function returns another value

IF Function Syntax

=IF(logical_test,value_if_true,value_if_false)

Example:

=IF(average>=60,"PASS","FAIL")

Problem 5.1

- The following worksheet shows activity on a bank account where a W implies an amount of money withdrawn and a D is a deposit.

	A	B	C	D
1	Initial Balance	$3,874.00		
2				
3	Date	Amount	Type	Balance
4	1/12/2011	$34.50	W	$3,839.50
5	1/4/2011	$100.00	D	$3,939.50
6	1/5/2011	$20.00	W	$3,919.50
7				

- When can the fill down happen in column D?
- What is the formula that is filled down?

Logical Operators

- Logical OR
  - OR(logical_test#1,logical_test#2)

- A value of TRUE is returned if EITHER of the logical tests returns a value of TRUE; otherwise, a value of FALSE is returned
  - =IF(OR(1<2,4=3),"HELLO","GOODBYE")

- Note: You can have more than two logical tests

Logical Operators

- Logical AND
  - AND(logical_test#1,logical_test#2)

- A value of TRUE is returned if BOTH of the logical tests returns a value of TRUE; otherwise, a value of FALSE is returned
  - =IF(AND(1<2,4=3),"HELLO","GOODBYE")

- Note: You can have more than two logical tests

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Problem 5.2

	A	B	C	D	E
1	Name	District	Sales	Emp. Yrs	Job Level
2	Linda	East	$20,000.00	2	
3	Joe	West	$42,302.00	9	
4	Bill	East	$53,001.00	3	
5	Mary	South	$12,000.00	12	
6	Mark	South	$ 2,050.00	6	
7	John	North	$9,000.00	0	
8	Ted	East	$40,000.00	4	

This data shows salespeople's district, annual sales, and number of years employed by a company. Now, let's suppose you want a formula in column E that will assign a job level based on two different criteria: Salespeople who have been employed for more than 5 years AND have annual sales of more than $10,000 should be assigned a job level code of 2, and all others should have a job level code of 1.

Problem 5.3

- Output the rate of commission that a salesperson receives based on the amount of sales they have generated for that month. Commissions are based on the following:

- From $1 to $10 earns 10% commission
- From $10.01 to $100 earns 15% commission
- Anything over $100 earns 20% commission

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Problem 5.3 Continued

	A	B	C
	Amount of Sales	**Percentage of Commission**	**Amount of Commission**
1	$15.00	15.00%	$2.25
2	$253.00	20.00%	$50.60
3	$10.00	10.00%	$1.00
4	$84.00	15.00%	$12.60
5	$12.00	15.00%	$1.80
6	$5.00	10.00%	$0.50
7	$32.00	15.00%	$4.80
8	$56.00	15.00%	$8.40
9	$150.00	20.00%	$30.00
10	$120.00	20.00%	$24.00