Practice with Sequence

Complete the problem solving process discussed in class for each of the following problems. You should submit written evidence of the process in the form of: a list of assumptions you've made to clarify the problem, an IPO chart, an algorithm and documentation of your testing.

1. Write an algorithm that converts a decimal number between 0 and 15 into its 4 bit unsigned binary representation.

2. Write an algorithm that converts a linear measurement in feet and inches into meters. One inch is equivalent to 2.54 centimeters.

Practice with Selection

Complete the problem solving process discussed in class for each of the following problems. You should submit written evidence of the process in the form of: a list of assumptions you've made to clarify the problem, an IPO chart, an algorithm and documentation of your testing.

1. Write an algorithm that can be used to calculate the commission earned in a real estate transaction. The chart below describes the formulas used to calculate the commission.

Sales Price	Commission
Less than $100,000	5% of Sales Price
$100,000 to $300,000	$5,000 + 10% of Sales Price over $100,000
More than $300,000	$25,000 + 15% of Sales Price over $300,000

2. Write an algorithm that can be used to calculate car insurance rates. Rates for male drivers and young female drivers are determined by adding a surcharge to the rate for female drivers over age 25.

	Older than 25	25 or younger
Male	7% more than base rate	10% more than base rate
Female	Base rate	5% more than base rate

3. Write an algorithm that allows the user to play "Rock, Paper, Scissors" against the computer. The user should enter R, P or S. The computer will then generate a random number – 1 means Rock, 2 means Paper, 3 means Scissors. The computer will then display a message describing the user and the computer choice as well as who won.