Homework due 9/9/09 Quiz. Name________________________

UAlbany TCSI201 Honors Intro. to CS.

1. What do the following 3 Python statements print? Assume dance is the name of a properly defined Python function. (Write your answers below)
   
   for danceStep in ["The", "United", "States"]
   print danceStep
   for danceStep in [0.0, 32.0, 100.0, 212.0]
   print danceStep
   for danceStep in [1, "The", 2.0, dance]
   print danceStep

   Statement 1:  
   Statement 2:  
   Statement 3:

2. What happens when you type a string like "Al Gore" in response to the prompt printed when a Python input( ) operation like input("Your age please:") executes?

3. Rewrite the following name in CamelCase: number_of_dance_steps

4. Complete the following function so it conforms to its documentation string:
   
   def tempCelsius( x ):
   """When number x represents a temperature in degrees Celsius, this function returns the equivalent temperature in degrees Farenheit. For example, when x=0 the return value is 32.0 and when x=100 the return value is 212.0""

   y =
   
   #YOU WRITE!

   return y
Group Exercise: Write your (4) names below:
___________________   ___________________   __________________   __________________
Plot the graph of Farenheit temperature versus Celsius temperature and use it to derive a formula that gives the Farenheit equivalent of Celsius temperature \( x \). The "x" or horizontal axis should be for Celsius temperature and the "y" or vertical axis should be for Farenheit temperature. Start by plotting the points \((0,32)\) and \((100,212)\) which correspond to the freezing and boiling points of water (at atmospheric pressure) respectively.

How many degrees Farenheit correspond to the 100 Celsius degree gap between those freezing and boiling points?

How many Farenheit degrees correspond to 1 degree Celsius?

How many Celsius degrees correspond to 1 degree Farenheit?

Draw a triangle with corners labelled by the points \((0,32)\), \((100,32)\) and \((100,212)\). Show how the slope of the hypotenuse is calculated from these numbers. Label the hypotenuse with its slope. Use the diagram to derive a formula requested.
Loan or Mortgage Analysis

ABCs:

1. The principal is the amount of money you currently owe the bank.
2. At the end of each month, money equal to the principal times the monthly interest rate is added to the principal. This called the interest for that month.
3. Assuming you are paying back the loan regularly, your monthly payment is then subtracted from the principal.
4. You've paid back the loan when the principal becomes zero or negative. Of course, if the principal would have gone negative after your last payment, the bank would cleverly make your last payment be less so that the principal becomes zero. (You can ignore that detail for this problem.)

Write a Python program that inputs (1) Initial Principal (2) Monthly Interest Rate and (3) Monthly Payment, and then runs a while loop that prints (a) the month number (1, 2, 3, etc for first, second, third, etc.) (b) the amount of interest that month. (c) Principal after adding the interest (d) Principal after also subtracting the monthly payment (e) Total of payments made to the bank so far, including this one. In other words, the program will print the "Loan Schedule" for the specified loan.

First write CamelCase names for the current principal (like `currPrin`), month number, interest that month, principal after adding interest, new current principal, current total of payments. The loop would start with `while currPrin > 0.0:`

When the program is done, experiment with how the monthly payment affects the length of the loan schedule and the total of payments. Use $20,000 for the initial principal and 8%/year, compounded monthly:

Report of results for $20,000 loan, 8%/year, compounded monthly:

Monthly payment. Length of loan in months and years.