# Practice: 1-6 (Solve using all three loops)

# Assignment: 7-11 (Solve using a for and a while loop). Demonstration is due at the beginning of your next-next class

### Simple Loop

1. Write a program to print the numbers 2 to 10 in increments of two on the same line. The output of your program should be 2 4 6 8 10
2. Write a Program to compute the sum of eight numbers that will be provided by the user.
3. Write a Program to compute the average of ten numbers which will be entered by the user.
4. Write a C# program that displays a conversion table from gallons to liters. The program should display gallons from 10 to 20 in one-gallon increments and the corresponding liter equivalents. Use the relationship that 1 gallon contains 3.785 liters.
5. Write a C# program that converts feet to meters. The program should display feet from 3 to 30 in three-foot increments and the corresponding meter equivalents. Use the relationship that 1 meter is equivalent to 3.28 feet.
6. Write a program that displays a conversion table from Fahrenheit to Celsius. The program must request the starting Fahrenheit value, the ending Fahrenheit value, and the increment. Thus, instead of the condition checking for a fixed count, the condition checks for the ending Fahrenheit value
7. Write a program to produce a table of the numbers 0 through 20 in increments of 2, with their squares and cubes.
8. Write a program to produce a table of numbers from 10 to 1, with their squares and cubes.
9. Write a C program that continuously requests a grade to be entered. If the grade is less than   
   0 or greater than 100, your program should print an appropriate message informing the user that an invalid grade has been entered, else the grade should be added to a total. When a grade of 999 is entered the program should exit the repetition loop and compute and display the average of the valid grades entered.
10. Write and run a C# program that calculates and displays the amount of money available in a bank account that initially has $1,000 deposited in it and that earns 8 percent interest a year. Your program should display the amount available at the end of each year for a period of ten years. Use the relationship that the money available at the end of each year equals the amount of money in the account at the start of the year plus .08 times the amount available at the start of the year.  
    Your output should be formatted as shown below  
    Year Balance  
    1 $1,080.00

2 $1,166.40

3 $1,259.71

4 $1,360.49

5 $1,469.33

6 $1,586.87

7 $1,713.82

8 $1,850.93

9 $1,999.00

10 $2,158.92

1. Print the decimal, octal, and hexadecimal values of all characters between the start and stop characters entered by a user. For example, if the user enters an a and a z, the program should print all the characters between a and z and their respective numerical values. Make sure that the second character entered by the user occurs later in the alphabet than the first character. If it does not, write a loop that repeatedly asks the user for a valid second character until one is entered.  
   Your output should be formatted as shown below  
   Letter Decimal Octal Hex  
   a 97 141 61  
   b 98 142 62  
   c 99 143 63  
   d 100 144 64  
   e 101 145 65  
   to obtain an int from a char use an explicit cast  
   to obtain an octal from an int use Convert.ToString(«number\_value», 8)  
   to obtain a hexadecimal from an int use Convert.ToString(«number\_value», 16)
2. Write a program to reverse the digits of a positive integer number. For example, if the number 8735 is entered, the number displayed should be 5378. (Hint: Use a do statement and continuously strip off and display the units digit of the number. If the variable num initially contains the number entered, the units digit is obtained as (num % 10). After a units digit is displayed, dividing the number by 10 sets up the number for the next iteration. Thus, (8735 % 10) is5and (8735 / 10) is 873. The do statement should continue as long as the remaining number is not zero).

### Nested Loops

1. Write a C# program that calculates and displays the yearly amount available if $1,000 is invested in a bank account for 10 years. Your program should display the amounts available for interest rates from 6 percent to 12 percent inclusively, at 1 percent increments. Use a nested loop, with the outer loop having a fixed count of 7 and the inner loop a fixed count of 10. The first iteration of the outer loop should use an interest rate of 6 percent and display the amount of money available at the end of the first 10 years. In each subsequent pass through the outer loop, the interest rate should be increased by 1 percent. Use the relationship that the money available at the end of each year equals the amount of money in the account at the start of the year plus the interest rate times the amount available at the start of the year.  
   **The output of this program should be in the form of a table.**
   1. Modify the program written for Question 1 to initially prompt the user for the amount of money initially deposited in the account.
   2. Modify the program written for Question 1 to initially prompt the user for both the amount of money initially deposited and the number of years that should be displayed.
   3. Modify the program written for Question 1 to initially prompt for the amount of money initially deposited, the interest rate to be used, and the number of years to be displayed.