Project #2 Directions
Pass By Value Functions

1. You are given a starter program
2. You will need to complete the program code

3. You will then test your program two ways:
   a. using keyboard input for the data
   b. letting the computer generate the input for the data

The following are some comments to help you complete the project

1. const bool KEYBOARD = false; if true the input is from the keyboard, if false the computer generates the data

2. ofstream Out("con"); this statement controls the location of you programs output

3. The following is a list of the functions you will use and write

```
int    getNumberOfSales(void);
int    getItemNumber(void);
double getPrice(int itemNumber);
bool   isTaxable(int itemNumber);
int    getQuantity(int itemNumber);
double getCost(int itemNumber, int count, double price);
double getTax(double sales);
void   printLine(ostream & w,int iNumber, int qty, double price,double cost, bool
taxable);
void   printTotal(ostream & w, int loopCount, double grandTotal, double taxDue);
void   headings(ostream & w);
void   startRandom(void);
void   prepareOutput( ostream & w);
```

4. **In your starter program skeleton is the main, driver program you will use:**

```
void main()
{
          int differentItems,       // Number of items to purchase
                      iNumber,              // Item number code
                      qty;                  // Number of a particular item
purchased
          double price,             // Price of a particular item
                       cost,              // The cost of the item purchase = price
* qty
                       taxableTotal,      // Total of all taxable purchases
                       nonTaxableTotal,   // Total of all nontaxable purchases
                       taxDue,            // Tax due on the taxable total
                       grandTotal;        // Sum of taxableTotal, nonTaxableTotal
          bool   taxable;           // Flag to indicate if the item is taxable
```

// STUDENT -- Initialize ONLY those variables that need an initial value

```
                          …  Students will supply their code at this point
```

```
          prepareOutput(Out);
          if (!KEYBOARD) startRandom();
          headings(Out); // for computer generate
          differentItems = getNumberOfSales();
          for( int i = 0; i < differentItems ; i++)
          {
                 iNumber = getItemNumber();
                 qty     = getQuantity(iNumber);
                 price   = getPrice(iNumber);
                 cost    = getCost(iNumber, qty, price);
                 taxable = isTaxable(iNumber);
```

// STUDENT – at this point write the C++ statements call the headings function
if you are using keyboard input, the headings will show up on
cout and will be the printLine function output will show up directly
underneath of the headings

```
                 // headings(Out);   // for keyboard input
```

STUDENT – MODIFY THIS CODE

```
                 printLine(Out,iNumber,qty,price,cost,taxable);
```

// STUDENT – at this point write the C++ statements to accumulate the
taxable total and the nontaxable total

```
                 //  accumulate
                              //   ******* -  taxable total
                              //   ********  -  nontaxable total

          }  // end for
          taxDue = getTax( taxableTotal   )   ;
          printTotal( Out,differentItems, grandTotal, taxDue);
}  // end main
```

5. Below are the functions used in Project 2. Some of the functions are already written.
Other functions contains only a function stub. Those functions you will need to write
according to the specifications given.

```
void startRandom(void)
{
        int seed;
        cout << "Enter seed value for random number generator: ";
        cin >> seed;
        srand(seed);
}


int getItemNumber(void)
{                              //  item number should be a 4-digit integer
        int num;
```

```
        if (KEYBOARD)
        {  cout << "Enter item number: ";
               cin >> num;
        }
        else
               num = rand() % 9000 + 1000;
        return num;
}

double getPrice(int num)
{                              //  price should be between .10 and 10.09
        double price;
        if (KEYBOARD)
               {  cout << "Enter price for item  " << num << " : ";
                      cin >> price;
               }
        else
                      price = double (rand() % 1000 + 10 ) / 100;
        return price;

}
bool isTaxable(int itemNumber)
{
         //  STUDENT – Write the code for the isTaxable function
                              …  Students will supply their code at this point

        //  ask the user
        //       OR
        //   computer will make NOT taxable if itemNumer is divisible by 5
        return true;        //  Function STUB - STUDENT – remove this code once your
function is written
}
int getQuantity(int num)
{
         //  STUDENT – Write the code for the getQuantity function
                              …  Students will supply their code at this point

        //  ask the user
        //       OR
        //   computer will make a choice between 1 and 8
  return 1;  //  Function STUB - STUDENT – remove this code once your function is
written
}

int getNumberOfSales(void)
{
         //  STUDENT – Write the code for the getNumberOfSales function
                              …  Students will supply their code at this point

        //  ask the user
        //       OR
        //   computer will make a choice between 1 and 15
 return 4; //  Function STUB - STUDENT – remove this code once your function is
written
}

double getCost(int itemNumber, int count, double price)
```

```
{
        //  STUDENT – Write the code for the getCost function
                        …  Students will supply their code at this point
             NOTE:  For your solution the parameter itemNumber is not needed
                    If there was a table of itemNumbers that were on sale,
                       then the parameter itemNumber would be used in the code

       return 1.00 ; //  Function STUB - STUDENT – remove this code once your
function is written
}

double getTax( double sales)
{
        //  STUDENT – Write the code for the getTax function
                        …  Students will supply their code at this point

//   define a const for the sales tax rate  - USE a rate of  0.0725
       return 1.00 ; //  Function STUB - STUDENT – remove this code once your
function is written
}

void printLine(ostream & w,int iNumber, int qty, double price,double cost, bool
taxable)
{
        //  STUDENT – Write the code for the printLine function
                        …  Students will supply their code at this point

//  Function STUB - STUDENT – remove this code once your function is written

       w << "***Detail line*******" << endl;  // print a "*" for the item which is
                                                // not taxable
}
```