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#include <fstream.h>
#include <iomanip.h>
#include <stdlib.h>

int main()
{
    // variable declarations
    int productCode;
    char manufacturer[21];
    char description[25];
    char color[3];
    char type;
    double price;
    int quantity;
    char reorderStatus;
    double subTotal;
    double total = 0;
    double avgPrice;
    int builtInCount = 0;
    int convertibleCount = 0;
    int portableCount = 0;
    int washerTotal = 0;
    int recCount = 0;

    // string variable declaration for input file
    char products[13] = "products.txt";

    // input file stream declaration
    ifstream inProducts;

    // open input file stream
    inProducts.open(products, ios::nocreate);

    // verify that products file exist
    if(inProducts.fail())
    {
        cout << "The file " << products << " does not exist.";
        exit(1);
    }

    // display colum headings
    cout << setiosflags(ios::left)
        << setw(8) << "CODE"
        << setw(11) << "MANU."
        << setw(10) << "DESC."
        << setw(6) << "COLOR"
        << setw(8) << "TYPE"
        << setw(7) << "PRICE"
        << setw(9) << "QTY"
        << setw(7) << "TOTAL"
        << setw(14) << "REORDER STATUS" << endl;

    // turn off the left-adjust flag
    resetiosflags(ios::left);

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// priming read from input file
inProducts >> productCode >> manufacturer >> description >> color >> type
        >> price >> quantity;

// read data from input file until end of file
while(!inProducts.eof())
{
    // calculate product cost
    subTotal = price * quantity;

    // determine inventory level
    if(quantity >= 0 && quantity <= 2)
        reorderStatus = 'H';
    else if(quantity >= 3 && quantity <= 5)
        reorderStatus = 'M';
    else
        reorderStatus = 'L';
    // end if

    // determine number of built-in, convertible, and portable dishwashers
    switch(type)
    {
    case 'B':
        builtInCount = builtInCount + 1;
        break;
    case 'C':
        convertibleCount = convertibleCount + 1;
        break;
    case 'P':
        portableCount = portableCount + 1;
        break;
    }

    // format and display detail line
    cout << setw(7) << productCode      << " ";

    cout << setiosflags(ios::left)
        << setw(10) << manufacturer      << " "
        << setw(9)  << description       << " "
        << setw(5)  << color              << " "
        << setw(5)  << type               << " ";

    // turn off left-adjust flag
    cout << resetiosflags(ios::left);

    cout << setiosflags(ios::right)
        << setiosflags(ios::fixed)
        << setiosflags(ios::showpoint)
        << setprecision(2)
        << setw(7)  << price      << " "
        << setw(3)  << quantity  << " "
        << setw(10) << subTotal  << " ";

    // turn off right-adjust flat
    cout << resetiosflags(ios::right);

    cout << reorderStatus << endl;
}

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// calculate total using accumulator
total = total + subTotal;

// count of dishwashers
washerTotal = washerTotal + quantity;

// count of records
recCount = recCount + 1;

// secondary read
inProducts >> productCode >> manufacturer >> description >> color
           >> type >> price >> quantity;
}

// calculate average price
avgPrice = total / washerTotal;

// display counters and accumulators
cout << "\nThe number of Built-in Washers is:  " << setw(8) << builtInCount
     << "\nThe number of Convertible Washers is:" << setw(8) << convertibleCount
     << "\nThe number of Portable Washers is:  " << setw(8) << portableCount
     << "\nThe Total Number of Washers is:    " << setw(8) << washerTotal
     << "\nThe Total Inventory in Dollars is:  " << setw(8) << total
     << "\nThe Average Price Per Washer is:   " << setw(8) << avgPrice
     << "\nThe Number of Records Processed is: " << setw(8) << recount
     << endl;

// close input file stream
inProducts.close();

return 0;
}

```