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1 //Calculator Project
2 //Allina Khan
3 //Homework #6
4 #include <iostream>
5 #include <cstdlib>
6 #include <fstream>
7 using namespace std;
8 //function prototypes
9 void menu();
10 void average(ifstream &, ofstream &);
11 void maximum(ifstream &, ofstream &);
12 void minimum(ifstream &, ofstream &);
13 void square(ifstream &, ofstream &);
14 void addition(ifstream &, ofstream &);
15 void subtract(ifstream &, ofstream &);
16 void multiply(ifstream &, ofstream &);
17 void divide(ifstream &, ofstream &);
18
19 /*Function menu()
20 Input:
21     none
22 Process:
23     Function prints the menu
24     Then prompts user to make a selection
25 Output:
26     Menu options and prompt for a selection.*/
27 void menu() {
28     cout << "+ - * / or % \t usual arithmetic operators" << endl
29     << "A \t\t Average of two #s " << endl
30     << "X \t\t Maximum of two #s" << endl
31     << "M \t\t Minimum of two #s" << endl
32     << "S \t\t Square of a number" << endl
33     << "Q \t\t Enter to quit program" << endl
34     << "Select an operand for your math problem: " << endl << endl;
35 return; }
36 /*Function average();
37 Input: redirected cin and cout file
38 Process:
39     initiates 3 integers x,y, average
40     Prompts user and reads in variable x and y
41     calculates average of x and y and stores in average
42 Output: Prints average of x and y.
43 */
44 void average(ifstream &in1, ofstream &out1) {
45     int x, y, average;
46     cout << "Enter two integers to find average. " << endl;
47     in1 >> x >> y;
48     average = (x+y)/2;
49     out1 << "The average of " << x << " and " << y << " is "
50     << average << endl << endl;
51 return; }
52
53 /*Function maximum();
54 Input: redirected cin and cout file
55 Process:
56     Initiates two integers x and y.
57     Prompts user and reads in two integers
58     Nested if statement finds maximum of x and y
59 Output: Prints which number is the maximum or that they're equivalent
60 */
61 void maximum(ifstream &in2, ofstream &out2) {
62     int x, y;
63     cout << "Enter two integers to find maximum. " << endl;
64     in2 >> x >> y;
65     if (x > y)
66         out2 << x << " is the maximum of " << x << " and " << y << endl

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67         << endl;
68     else if (x < y)
69         out2 << y << " is the maximum of "<<x<<" and "<<y<< endl
70         << endl;
71     else if (x == y)
72         out2 << "The two numbers "<< x << ", " << y << " are equal."
73         << endl<< endl;
74 return;}
75 /*Function minimum();
76 Input: redirected cin and cout file
77 Process:
78     Initiates two integers x and y.
79     Prompts user and reads in two integers
80     Nested if statement finds minimum of x and y
81 Output: Prints which number is the minimum or that they're equivalent
82 */
83 void minimum(ifstream &in3, ofstream &out3) {
84     int x, y;
85     cout << "Enter two integers to find minimum. " << endl;
86     in3 >> x >> y;
87     if (x > y)
88         out3 << y << " is the minimum of "<<x<<" and "<<y<< endl<< endl;
89     else if (x < y)
90         out3 << x << " is the minimum of "<<x<<" and "<<y<< endl<< endl;
91     else if (x == y)
92         out3 << "The two numbers "<< x << ", " << y << " are equal."
93         << endl<< endl;
94 return;}
95 /*Function maximum()
96 Input: redirected cin and cout file
97 Process:
98     Initiates two integers x and square.
99     Prompts user and reads in value for x
100     Multiplies value of x by itself and stores in square.
101 Output: Prints value x and it's square
102 */
103 void square(ifstream &in4, ofstream &out4) {
104     int x, square;
105     cout << "Enter one integer. "<<endl;
106     in4 >> x;
107     square = x*x;
108     out4 << "The square of "<< x <<" is " << square << endl<< endl;
109 return;}
110 /*Function addition()
111 Input: redirected cin and cout file
112 Process:
113     Initiates integers x,y, and sum
114     Prompts user and reads in values for x and y.
115     Adds x and y and stores value in sum.
116 Output: Prints value of x, y, and sum.
117 */
118 void addition(ifstream &in5, ofstream &out5) {
119     int x, y, sum;
120     cout << "Enter two integers to add. "<<endl;
121     in5 >> x >> y;
122     sum= x+y;
123     out5 << "The sum of " << x << " + " << y << " is " << sum<< endl
124     << endl;
125 return;}
126 /*Function subtract()
127 Input: redirected cin and cout file
128 Process:
129     initiates integers x, y, and sub (Subtract)
130     Prompts user and reads in values for x and y.
131     Subtracts x by y and stores value in sub.
132 Output: Prints value of x, y, and sub.

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133 */
134 void subtract(ifstream &in6, ofstream &out6) {
135     int x, y, sub;
136     cout << "Enter two integers to subtract. " << endl;
137     in6 >> x >> y;
138     sub= x-y;
139     out6 << "The subtraction of " << x << " - " << y << " = " << sub
140     <<endl<< endl;
141 return;}
142 /*Function multiply()
143 Input: redirected cin and cout file
144 Process:
145     Initiates integers x, y, and mult (multiplication)
146     Prompts user and reads in values for x and y.
147     Multiplies x and y and stores value in mult.
148 Output: Prints x, y, and mult.
149 */
150 void multiply(ifstream &in7, ofstream &out7) {
151     int x, y, mult;
152     cout << "Enter two integers to multiply. " <<endl;
153     in7 >> x >> y;
154     mult= x*y;
155     out7 << "The multiplication of " << x << " * " << y << " = "
156     << mult<< endl<< endl;
157     return;}
158 /*Function divide()
159 Input: redirected cin and cout file
160 Process:
161     Initiates integers x, t, and div. (Divide)
162     Prompts user and reads in values for x and y.
163     Divides x by y and stores value in div.
164 Output: Prints x, y, and div.
165 */
166 void divide(ifstream &in8, ofstream &out8) {
167     int x, y, div;
168     cout << "Enter two integers to divide. " <<endl;
169     in8 >> x >> y;
170     div= x/y;
171     out8 << "The division of " << x << " / " << y << " = "
172     << div<< endl<< endl;
173 return;}
174 int main() {
175     char operation;
176     bool escape=true;           //will act as escape mechanism
177     //redirecting files
178     ifstream in("chap6in.txt");
179     ofstream out("chap6out.txt");
180
181     out << "Allina Khan\nProgram 6 Calculator \n\n";
182     do {
183         //Prints menu and prompts user for input
184         menu();
185         in >> operation;
186         //evaluates user input with two numbers.
187         switch(operation) {
188             case 'a':
189             case 'A':
190                 average(in,out);
191                 break;
192             case 'x':
193             case 'X':
194                 maximum(in,out);
195                 break;
196             case 'm':
197             case 'M':
198                 minimum(in,out);

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199         break;
200     case 's':
201     case 'S':
202         square(in,out);
203         break;
204     case '+':
205         addition(in,out);
206         break;
207     case '-':
208         subtract(in,out);
209         break;
210     case '*':
211         multiply(in,out);
212         break;
213     case '/':
214         divide(in,out);
215         break;
216     case 'q':
217     case 'Q':
218         cout << "You entered Q, now quitting program.";
219         //escape so that while loop ends
220         escape=false;
221         break;
222     default:
223         cout <<"invalid choice" << endl;
224         break;
225     }
226 }
227 while (escape);
228 return 0; }
229
230
231
232
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