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1  /* Program:
2     Author: Tom Stutler
3     Last Date Modified: 4/9/15
4
5     The intent of this program is to prompt the user for an email
6     address and check then return to the user whether the email
7     address is valid and if not what the error is.
8  */
9
10 #include <iostream>
11
12 using namespace std;
13
14 int NUM_OF_TESTS=4;
15
16 bool test0 (string emailParam);
17 ///Takes in an email address and returns true
18 ///if the string has a space in it.
19
20 bool test1 (string emailParam);
21 ///Takes in an email address and returns true
22 ///if the string has more than one @ symbol in it.
23
24 bool test2 (string emailParam);
25 ///Takes in an email address and returns true
26 ///if the string begins with an @ symbol.
27
28 bool test3 (string emailParam);
29 ///Takes in an email address and returns true
30 ///if the string contains a dot char, '.', without
31 ///a non-dot/non-@ on either side of the dot.
32
33 void displayerror(int errorParam);
34 ///Takes in an error code, the number of the
35 ///test that failed, and outputs the error
36 ///message to the user.
37
38 int main()
39 {
40     string userEmail;
41     bool testArray[NUM_OF_TESTS];
42     char repeat;
43     int testPass=0;
44
45     do
46     {
47         cout << "Enter email address: ";
48         getline(cin, userEmail);
49
50         cout << "You entered: " << userEmail << endl;
51
52         testArray[0] = test0(userEmail);
53         testArray[1] = test1(userEmail);
54         testArray[2] = test2(userEmail);
55         testArray[3] = test3(userEmail);
56
57         for (int i=0; i<NUM_OF_TESTS; i++) {
58             if (testArray[i]==true) {
59                 displayerror(i);
60             } else {
61                 testPass++;
62             }
63         }
64         if (testPass==4) {
65             cout << "Address is valid!\n";
66         }

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67
68     do
69     {
70         cout << "Enter another (y or n)? ";
71         cin >> repeat;
72         repeat = toupper(repeat);
73
74         if (repeat!='Y' && repeat!='N') {
75             cout << "Invalid input!\n";
76         }
77     } while (repeat!='Y' && repeat!='N');
78
79     cin.ignore(80, '\n');
80
81     } while (repeat=='Y');
82 }
83
84 bool test0 (string emailParam)
85 {
86     if (emailParam[emailParam.find(' ')]==' ') {
87         return true;
88     } else {
89         return false;
90     }
91 }
92
93 bool test1 (string emailParam)
94 {
95     int symbolIndex, symbolCount=0;
96
97     symbolIndex = emailParam.find('@');
98
99     do
100     {
101         if (emailParam[symbolIndex]=='@') {
102             symbolCount++;
103         }
104
105         symbolIndex = emailParam.find('@', symbolIndex+1);
106     } while (symbolIndex<emailParam.length());
107
108     if (symbolCount==1) {
109         return false;
110     } else {
111         return true;
112     }
113 }
114
115 bool test2 (string emailParam)
116 {
117     if (emailParam[0]=='@') {
118         return true;
119     } else {
120         return false;
121     }
122 }
123
124 bool test3 (string emailParam)
125 {
126     int dotIndex;
127     bool invalidDot;
128
129     dotIndex = emailParam.find('.');
130
131     do
132     {

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133         if (isalpha(toupper(emailParam[dotIndex-1]))==true
134             && isalpha(toupper(emailParam[dotIndex+1]))==true) {
135             invalidDot = false;
136         } else {
137             return true;
138         }
139
140         dotIndex = emailParam.find('.', dotIndex+1);
141     } while (dotIndex<emailParam.length());
142
143     return invalidDot;
144 }
145
146 void displayerror (int errorParam)
147 {
148     switch (errorParam)
149     {
150     case 0:
151         cout << "Not valid - contains a blank\n";
152         break;
153
154     case 1:
155         cout << "Not valid - not exactly one '@'\n";
156         break;
157
158     case 2:
159         cout << "Not valid - '@' is first character\n";
160         break;
161
162     case 3:
163         cout << "Not valid - a dot is first or last, "
164              << "or preceeded or followed by '@' or ' ' or '.'\n";
165         break;
166     }
167 }

```