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1  #include <iostream>
2  using namespace std;
3
4  /* Final 1:00pm Monday Dec 11th
5   * 1/2 multiple choice/short answer
6   * 1/2 programs you write by hand
7   * 10 multiple choice/short answer
8   * No syntax intentional errors
9   * assignments
10  *   a=10;
11  *   math  a=a+10;  a+=10;  a=a*10; a*=10;
12  * declarations
13  *   int a;
14  *   fundamental types (intrinsic types)
15  *       float
16  *       int
17  *       string
18  *       bool
19  * conditionals
20  *   if, if-then-else
21  *   if(bool) {
22  *       }
23  *   if(bool) {
24  *       } else {
25  *       }
26  *   if(bool) {
27  *       } else if(other bool) {
28  *       }
29  *   switch
30  *   aggregating boolean expressing
31  *   if (a!=4 || a<6) {
32  *       }
33  * loops
34  *   while
35  *   for
36  * functions
37  *   collection of useful code that is reused
38  *   difference formal arguments
39  *   actual arguments (passed arguments)
40  *   int fun(int x) {
41  *       return x*x;
42  *   }
43  *   int fun(int &x) {
44  *       return x*x;
45  *   }
46  *   ....
47  *   fun(a);
48  *   Recursive functions
49  *       functions that use themselves
50  *       Stopping criteria
51  * enumerated (enum)
52  *   make a new type from a list of items
53  *   enum States {Locked,Spinning};
54  *   ...
55  *   enum States s;
56  * typedef make a new type for the compiler
57  * typedef enum {Locked, Spinning} States;
58  *   States s;
59  * struct
60  *   struct Name { partType part; partType2 part2;};
61  *   struct Student {

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62      *      string first,last;
63      *      float average;
64      *      };
65      *      ....
66      *      struct Student s;
67      * parallel argument for using typedef
68      */
69
70      /* Write a program to produce the following using for loops
71      * 0 1 2 3 4
72      * 1 2 3 4 5
73      * 2 3 4 5 6
74      */
75      void example1() {
76          for (int j=0;j<3;j++) {
77              for(int i=0;i<5;i++) {
78                  cout << (i+j) << ' ';
79              }
80              cout << endl;
81          }
82      }
83      /* Write a program to produce the following using for loops
84      * 0 1 2 Boo 4
85      * 1 2 Boo 4 5
86      * 2 Boo 4 5 6
87      */
88      void example2() {
89          for (int j=0;j<3;j++) {
90              for(int i=0;i<5;i++) {
91                  if ((i+j)==3) cout << "Boo ";
92                  else cout << (i+j) << ' ';
93              }
94              cout << endl;
95          }
96      }
97      /* Write a function that will add and return all the numbers
98      * from 1 to n where n is an integer
99      * n should be a formal argument to the function
100     */
101     int fun(int n) {
102         int total=0;
103         for (int i=1;i<=n;i++) {
104             total+=i;
105         }
106         return total;
107         return n*(n+1)/2;
108     }
109     /* Write a function that outputs a string replacing all
110     * vowels with '?'
111     */
112     void output(string s) {
113         string vowels="aeiouy";
114         for (int i=0;i<s.size();i++) {
115             if (s[i]=='a' || s[i]=='e' ...) {
116                 cout << "?";
117             } else {
118                 cout << s[i];
119             }
120         }
121     }
122     /* Write a program that uses a structure to store the

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123  * first, last name and phone number of a set of at most
124  * 20 contacts. Just show the declarations. No input/output
125  */
126  struct Contact {
127      string first,last;
128      long phonenumber;
129  };
130  struct Contacts cs[20];
131
132  const int MaxContacts=20;
133  typedef struct {
134      string first,last;
135      long phonenumber;
136  }Contact;
137  Contacts cs[MaxContacts];
138
139  /*Given structure above write the code to get the information
140  * from cin
141  */
142  int count;
143  cout <<"Enter number of contacts"<<endl;
144  cin >> count;
145  for (int i=0;i<count;i++) {
146      cout << "Enter first, last and phonenumber for a contact"<<endl;
147      cin >> cs[i].first >> cs[i].last >> cs[i].phonenumber;
148  }
149
150  int main() {
151      example2();
152      return 0;
153  }
154
```