```cpp
1  //
2  // Application source file for A4
3  //
4  // Hal Bettle
5  //
6  // 5 September 2008
7  //
8  // See comments at end of file for object and test descriptions
9  //
10
11 #include <iostream>
12 #include <iomanip>
13 using namespace std;
14
15 #include "CPTN230A4class_bettle.h"
16
17 void print_date(Date &);
18
19 int main(int argc, char* argv[])
20 {
21     cout << "Welcome to Assignment 4\n" << endl;
22
23     // Make all the objects, test constructors and display results
24
25     Date d1;
26     cout << "d1 = "; print_date(d1); cout << endl;
27     Date d2(1);
28     cout << "d2 = "; print_date(d2); cout << endl;
29     Date d3(1, 8);
30     cout << "d3 = "; print_date(d3); cout << endl;
31     Date d4(1, 8, 1957);
32     cout << "d4 = "; print_date(d4); cout << endl;
33     Date d5(32, 9, 1957);
34     cout << "d5 = "; print_date(d5); cout << endl;
35     Date d6(1, 13, 1957);
36     cout << "d6 = "; print_date(d6); cout << endl;
37     Date d7(1, 8, 1957);
38     cout << "d7 = "; print_date(d7); cout << endl;
39     Date d8(15, 8, 1957);
40     cout << "d8 = "; print_date(d8); cout << endl;
41     Date d9(1, 9, 1957);
42     cout << "d9 = "; print_date(d9); cout << endl;
43     Date d10(1, 8, 1951);
44     cout << "d10 = "; print_date(d10); cout << endl;
45     Date d11(1, 8, 2001);
46     cout << "d11 = "; print_date(d11); cout << endl;
47     Date d12(15, 1, 1957);
48     cout << "d12 = "; print_date(d12); cout << endl;
49     Date d13(31, 1, 1957);
50     cout << "d13 = "; print_date(d13); cout << endl;
51     Date d14(28, 2, 1957);
52     cout << "d14 = "; print_date(d14); cout << endl;
53     Date d15(28, 2, 1960);
54     cout << "d15 = "; print_date(d15); cout << endl;
55     Date d16(31, 12, 1957);
56     cout << "d16 = "; print_date(d16); cout << endl;
57     Date d17(31, 12, 1999);
58     cout << "d17 = "; print_date(d17); cout << endl;
59     Date d18(29, 2, 1999);
60     cout << "d18 = "; print_date(d18); cout << endl;
61     Date d19(29, 2, 2000);
62     cout << "d19 = "; print_date(d19); cout << endl;
63     Date d20;
64     cout << "d20 = "; print_date(d20); cout << endl;
65     Date d21;
66     cout << "d21 = "; print_date(d21); cout << endl;
```

```
67      Date d22;
68      cout << "d22 = "; print_date(d22); cout << endl;
69      Date d23;
70      cout << "d23 = "; print_date(d23); cout << endl;
71      Date d24;
72      cout << "d24 = "; print_date(d24); cout << endl;
73      Date d25;
74      cout << "d25 = "; print_date(d25); cout << endl;
75
76      cout << endl;
77
78      //  Now do all the tests
79
80      if ( (d4 == d7) )
81      {
82          cout << "Test 1 Passed" << endl;
83      }
84      else
85      {
86          cout << "Test 1 Failed" << endl;
87      }
88
89      if ( !(d4 == d8) )
90      {
91          cout << "Test 2 Passed" << endl;
92      }
93      else
94      {
95          cout << "Test 2 Failed" << endl;
96      }
97
98      if ( !(d4 == d9) )
99      {
100         cout << "Test 3 Passed" << endl;
101     }
102     else
103     {
104         cout << "Test 3 Failed" << endl;
105     }
106
107     if ( !(d4 == d10) )
108     {
109         cout << "Test 4 Passed" << endl;
110     }
111     else
112     {
113         cout << "Test 4 Failed" << endl;
114     }
115
116     if ( !(d4 != d7) )
117     {
118         cout << "Test 5 Passed" << endl;
119     }
120     else
121     {
122         cout << "Test 5 Failed" << endl;
123     }
124
125     if ( (d4 != d8) )
126     {
127         cout << "Test 6 Passed" << endl;
128     }
129     else
130     {
131         cout << "Test 6 Failed" << endl;
132     }
```

```
133
134     if ( (d4 != d9) )
135     {
136         cout << "Test 7 Passed" << endl;
137     }
138     else
139     {
140         cout << "Test 7 Failed" << endl;
141     }
142
143     if ( (d4 != d10) )
144     {
145         cout << "Test 8 Passed" << endl;
146     }
147     else
148     {
149         cout << "Test 8 Failed" << endl;
150     }
151
152     if ( !(d4 < d7) )
153     {
154         cout << "Test 9 Passed" << endl;
155     }
156     else
157     {
158         cout << "Test 9 Failed" << endl;
159     }
160
161     if ( (d4 < d8) )
162     {
163         cout << "Test 10 Passed" << endl;
164     }
165     else
166     {
167         cout << "Test 10 Failed" << endl;
168     }
169
170     if ( (d4 < d9) )
171     {
172         cout << "Test 11 Passed" << endl;
173     }
174     else
175     {
176         cout << "Test 11 Failed" << endl;
177     }
178
179     if ( !(d4 < d10) )
180     {
181         cout << "Test 12 Passed" << endl;
182     }
183     else
184     {
185         cout << "Test 12 Failed" << endl;
186     }
187
188     if ( (d4 <= d7) )
189     {
190         cout << "Test 13 Passed" << endl;
191     }
192     else
193     {
194         cout << "Test 13 Failed" << endl;
195     }
196
197     if ( (d4 <= d8) )
198     {
```

```cpp
199             cout << "Test 14 Passed" << endl;
200         }
201         else
202         {
203             cout << "Test 14 Failed" << endl;
204         }
205
206         if ( (d4 <= d9) )
207         {
208             cout << "Test 15 Passed" << endl;
209         }
210         else
211         {
212             cout << "Test 15 Failed" << endl;
213         }
214
215         if ( !(d4 <= d10) )
216         {
217             cout << "Test 16 Passed" << endl;
218         }
219         else
220         {
221             cout << "Test 16 Failed" << endl;
222         }
223
224         if ( !(d4 > d7) )
225         {
226             cout << "Test 17 Passed" << endl;
227         }
228         else
229         {
230             cout << "Test 17 Failed" << endl;
231         }
232
233         if ( !(d4 > d8) )
234         {
235             cout << "Test 18 Passed" << endl;
236         }
237         else
238         {
239             cout << "Test 18 Failed" << endl;
240         }
241
242         if ( !(d4 > d9) )
243         {
244             cout << "Test 19 Passed" << endl;
245         }
246         else
247         {
248             cout << "Test 19 Failed" << endl;
249         }
250
251         if ( (d4 > d10) )
252         {
253             cout << "Test 20 Passed" << endl;
254         }
255         else
256         {
257             cout << "Test 20 Failed" << endl;
258         }
259
260         if ( (d4 >= d7) )
261         {
262             cout << "Test 21 Passed" << endl;
263         }
264         else
```

```
265        {
266            cout << "Test 21 Failed" << endl;
267        }
268
269        if ( !(d4 >= d8) )
270        {
271            cout << "Test 22 Passed" << endl;
272        }
273        else
274        {
275            cout << "Test 22 Failed" << endl;
276        }
277
278        if ( !(d4 >= d9) )
279        {
280            cout << "Test 23 Passed" << endl;
281        }
282        else
283        {
284            cout << "Test 23 Failed" << endl;
285        }
286
287        if ( (d4 >= d10) )
288        {
289            cout << "Test 24 Passed" << endl;
290        }
291        else
292        {
293            cout << "Test 24 Failed" << endl;
294        }
295
296        cout << endl;
297
298        cout << "d12 = "; print_date(d12); cout << endl;
299        cout << "d20 = "; print_date(d20); cout << endl;
300        d20 = ++d12;
301        cout << "d12 = "; print_date(d12); cout << endl;
302        cout << "d20 = "; print_date(d20); cout << endl;
303
304        cout << "d13 = "; print_date(d13); cout << endl;
305        cout << "d21 = "; print_date(d21); cout << endl;
306        d21 = ++d13;
307        cout << "d13 = "; print_date(d13); cout << endl;
308        cout << "d21 = "; print_date(d21); cout << endl;
309
310        cout << "d14 = "; print_date(d14); cout << endl;
311        cout << "d22 = "; print_date(d22); cout << endl;
312        d22 = ++d14;
313        cout << "d14 = "; print_date(d14); cout << endl;
314        cout << "d22 = "; print_date(d22); cout << endl;
315
316        cout << "d15 = "; print_date(d15); cout << endl;
317        cout << "d23 = "; print_date(d23); cout << endl;
318        d23 = ++d15;
319        cout << "d15 = "; print_date(d15); cout << endl;
320        cout << "d23 = "; print_date(d23); cout << endl;
321
322        cout << "d16 = "; print_date(d16); cout << endl;
323        cout << "d24 = "; print_date(d24); cout << endl;
324        d24 = ++d16;
325        cout << "d16 = "; print_date(d16); cout << endl;
326        cout << "d24 = "; print_date(d24); cout << endl;
327
328        cout << "d17 = "; print_date(d17); cout << endl;
329        cout << "d25 = "; print_date(d25); cout << endl;
330        d25 = ++d17;
```

```
331     cout << "d17 = "; print_date(d17); cout << endl;
332     cout << "d25 = "; print_date(d25); cout << endl;
333
334     cout << endl;
335     cout << "Thank you for using Assignment 4" << endl;
336
337     return 0;
338 }
339
340 void print_date(Date &date)
341 {
342     cout << date.get_day() << "/" << date.get_month() << "/" << date.get_year();
343     return;
344 }
345
346 /*
347     Date Objects Created
348
349     obj      day      month    year
350     ----------------------------
351     d1       today    today    today
352     d2       1        today    today
353     d3       1        8        today
354     d4       1        8        1957
355     d5       32       9        1957
356     d6       1        13       1957
357     d7       1        8        1957
358     d8       15       8        1957
359     d9       1        9        1957
360     d10      1        8        1951
361     d11      1        8        2001
362     d12      15       1        1957
363     d13      31       1        1957
364     d14      28       2        1957
365     d15      28       2        1960
366     d16      31       12       1957
367     d17      31       12       1999
368     d18      29       2        1999
369     d19      29       2        2000
370     d20      d12++
371     d21      d13++
372     d22      d14++
373     d23      d15++
374     d24      d16++
375     d25      d17++
376
377
378     Tests performed and expected results and why
379
380     test             status           result       comment
381     -----------------------------------------------
382     cons d1          success          today        today
383     cons d2          success          today        day = 15
384     cons d3          success          today        day = 1, month = 8
385     cons d4          success          today        day = 1, month = 8, year = 1957
386     cons d5          fail             1/1/2000     bad day
387     cons d6          fail             1/1/2000     bad month
388
389     d4 == d7         success          1            all fields ==
390     d4 == d8         fail             0            day != day
391     d4 == d9         fail             0            month != month
392     d4 == d10        fail             0            year != year
393
394     d4 != d7         fail             0            all items ==
395     d4 != d8         success          1            day != dat
396     d4 != d9         success          1            month != month
```

```
397     d4 != d10        success         1               year != year
398
399     d4 <  d7         fail            0               all items ==
400     d4 <  d8         success         1               day < day
401     d4 <  d9         success         1               month < month
402     d4 <  d10        fail            0               year > year
403
404     d4 <= d7         success         1               all items ==
405     d4 <= d8         success         1               day < day
406     d4 <= d9         success         1               month < month
407     d4 <= d10        fail            0               year > year
408
409     d4 > d7          fail            0               all items ==
410     d4 > d8          fail            0               day < day
411     d4 > d9          fail            0               month < month
412     d4 > d10         success         1               year > year
413
414     d4 <= d7         success         1               all items ==
415     d4 <= d8         fail            0               day < day
416     d4 <= d9         fail            0               month < month
417     d4 <= d10        success         1               year > year
418
419     d20 = d12++      success         16/1/1957
420     d21 = d13++      success         1/9/1957
421     d22 = d14++      success         1/2/1957
422     d23 = d15++      success         29/2/1960
423     d24 = d16++      success         1/1/1957
424     d25 = d17++      success         1/1/2000
425 */
426
```