

1) Example2.java

```
1 package template.e2;
2
3 ///////부품
4
5 abstract class MyObject {
6     public abstract int compare(MyObject obj);
7     public abstract void print();
8 }
9
10 class MyString extends MyObject {
11     String _s;
12
13     public MyString(String s) {
14         _s = s;
15     }
16
17     @Override
18     public void print() {
19         System.out.printf("%s ", _s);
20     }
21
22     @Override
23     public int compare(MyObject obj) {
24         if (obj instanceof MyString == false)
25             return -1;
26         return _s.compareTo(((MyString) obj)._s);
27     }
28 }
29
30 class MyInteger extends MyObject {
31     int _i;
32
33     public MyInteger(int i) {
34         _i = i;
35     }
36
37     @Override
38     public void print() {
39         System.out.printf("%d ", _i);
40     }
41
42     @Override
43     public int compare(MyObject obj) {
44         if (obj instanceof MyInteger == false)
45             return -1;
46         return _i - ((MyInteger) obj)._i;
47     }
48 }
49
50 interface Action {
51     void run(MyObject object);
52 }
53
54 class MyArray {
55     private MyObject[] data;
56     private int count;
57
58     public MyArray(int size) {
59         data = new MyObject[size];
60         count = 0;
61     }
62
63     public void add(MyObject value) {
64         data[count++] = value;
65     }
66
67     public MyObject get(int index) {
68         return data[index];
69     }
69 }
```

```

69     }
70
71     public int getCount() {
72         return count;
73     }
74
75     public void doForEach(Action action) {
76         for (int i = 0; i < count; ++i)
77             action.run(data[i]);
78     }
79
80     void quicksort(int lo, int hi) {
81         int i = lo, j = hi;
82         MyObject h;
83         MyObject x = data[(lo + hi) / 2];
84
85         do {
86             while (data[i].compare(x) < 0)
87                 i++;
88             while (data[j].compare(x) > 0)
89                 j--;
90             if (i <= j) {
91                 h = data[i];
92                 data[i] = data[j];
93                 data[j] = h;
94                 i++;
95                 j--;
96             }
97         } while (i <= j);
98
99         if (lo < j)
100             quicksort(lo, j);
101         if (i < hi)
102             quicksort(i, hi);
103     }
104
105     public void sort() {
106         quicksort(0, count - 1);
107     }
108 }
109
110 //클라이언트
111
112 class PrintAction implements Action {
113     @Override
114     public void run(MyObject object) {
115         object.print();
116     }
117 }
118
119 public class Example2 {
120
121     public static void main(String[] args) {
122         MyArray a1 = new MyArray(100);
123         MyArray a2 = new MyArray(100);
124         PrintAction print = new PrintAction();
125
126         for (int i = 0; i < 20; ++i) {
127             int n = (int) (Math.random() * 100);
128             String s = String.format("[%d]", n);
129             a1.add(new MyInteger(n));
130             a2.add(new MyString(s));
131         }
132
133         a1.doForEach(print);
134         System.out.println("");
135         a2.doForEach(print);
136         System.out.println("");
137     }

```

138	a1.sort();
139	a2.sort();
140	
141	a1.forEach(print);
142	System.out.println("");
143	a2.forEach(print);
144	System.out.println("");
145	}
146	}
147	

실행 사례 출력

5	88	58	26	80	22	20	79	92	3	23	9	7	8	92	43	82	45	68	16
[5]	[88]	[58]	[26]	[80]	[22]	[20]	[79]	[92]	[3]	[23]	[9]	[7]	[8]	[92]	[43]	[82]	[45]	[68]	[16]
3	5	7	8	9	16	20	22	23	26	43	45	58	68	79	80	82	88	92	92
[16]	[20]	[22]	[23]	[26]	[3]	[43]	[45]	[58]	[5]	[68]	[79]	[7]	[80]	[82]	[88]	[8]	[92]	[92]	[9]