

Beyond Generics

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More on Generic Array

We had this code last time.....

```
1  class SimpleArray<E>{  
2      E[] arr; int count;  
3  
4      @SuppressWarnings("unchecked")  
5      SimpleArray(int init_size){  
6          arr = (E[]) (new Object[init_size]);  
7      }  
8  }
```

- it works when we do

```
1  SimpleArray<Object> sao = new SimpleArray<Object>(10);
```

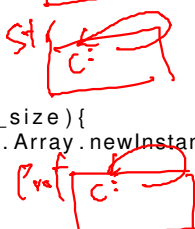
- it doesn't work when we do

```
1  SimpleArray<String> sas = new SimpleArray<String>(10);
```

More on Generic Array

the code that works.....

```
1 class SimpleArray<E>{
2     E[] arr; int count;
3
4     @SuppressWarnings("unchecked")
5     SimpleArray(Class<E> c, int init_size){
6         arr = (E[])java.lang.reflect.Array.newInstance(c,
7             init_size);
8     }
```



```
1 SimpleArray<Object> sao =
2     new SimpleArray<Object>(Object.class, 10);
3 SimpleArray<String> sas =
4     new SimpleArray<String>(String.class, 10);
5 SimpleArray<String> sas_wrong =
6     new SimpleArray<String>(Integer.class, 10); //compile error
```

More on for-each

```
1  class Util{
2      public static double cool_avg(double [] arr){
3          double res = 0.0;
4          for(double element: arr) res += element;
5          return res / arr.length;
6      }
7  }
```

- code translation for native (primitive or extended) array:

```
1  for(int i=0;i<arr.length;i++){
2      double element = arr[i];
3      res += element;
4  }
```

- implicitly **read-only**

More on for-each

```
1 class Util{
2     public static double cool_avg(ArrayList<Double> arr){
3         double res = 0.0;
4         for(Double element: arr) res += element;
5         return res / arr.length;
6     }
7 }
```

- code translation for `Collection<E>` (actually, any `Iterable<E>`): *interface*

h=N
next
restart

```
1 for(Iterator<Double> iter=arr.iterator();
2     iter.hasNext(); ){
3     Double element = iter.next();
4     res += element;
5 }
```

- assume elements won't change during the loop