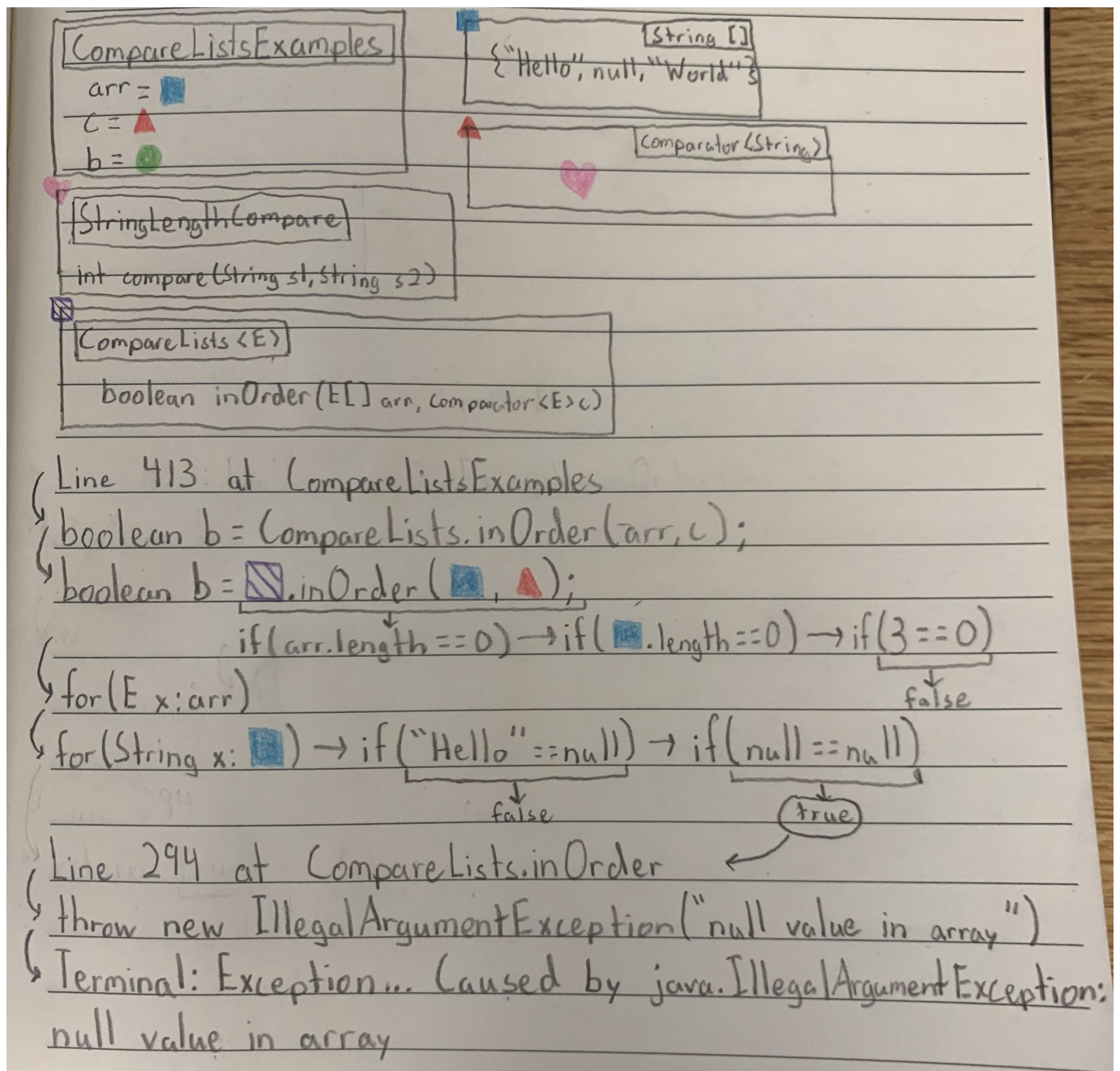# PA8 – Exceptions Memory Diagram Template

Output at command line with stack trace here

```
pranavvijay@Pranavs-MacBook-Pro pa8-starter-main % ./run CompareListsExamples.java
Exception in thread "main" java.lang.RuntimeException: The CompareListsExamples class could not be instantiated.
Please make sure that your examples class has a default constructor that does not fail during instantiation.
```

```
Caused by: java.lang.IllegalArgumentException: null value in array
        at CompareLists.inOrder(CompareLists.java:294)
        at CompareListsExamples.<init>(CompareLists.java:413)
        ... 6 more
```

Drawing of memory at the point the exception was thrown here

CompareListsExamples
arr = ■
c = ▲
b = ●

String []
{"Hello", null, "World"}

Comparator <String>

StringLengthCompare
int compare (String s1, String s2)

CompareLists <E>
boolean inOrder (E[] arr, Comparator <E> c)

Line 413 at CompareListsExamples
boolean b = CompareLists.inOrder(arr, c);
boolean b = ▨.inOrder(■, ▲);
    if (arr.length == 0) → if (■.length == 0) → if (3 == 0)
                                                      false
for (E x : arr)
for (String x: ■) → if ("Hello" == null) → if (null == null)
                              false   true

Line 294 at CompareLists.inOrder
throw new IllegalArgumentException ("null value in array")
Terminal: Exception... Caused by java.IllegalArgumentException:
null value in array

Screenshots of all method bodies and method calls from your code on the stack at the point of throwing the exception here (only include objects/arrays on the heap that are relevant for the method call(s) involved in the error). Make sure to show all the variables in use when the throw happens!

```java
class CompareListsExamples
{
  String[] arr={"Hello",null,"World"};
  Comparator<String> c=new StringLengthCompare();
  boolean b=CompareLists.inOrder(arr, c);
}
```

```java
public static <E> boolean inOrder(E[] arr,Comparator<E> c)
{
  if(arr.length==0)
    return true;
  for(E x:arr)
  {
    if(x==null)
      throw new IllegalArgumentException("null value in array");
  }
  for(int i=0;i<arr.length-1;i++)
  {
    if(c.compare(arr[i],arr[i+1])>0)
      return false;
  }
  return true;
}
```

```java
class StringLengthCompare implements Comparator<String>
{
  public int compare(String s1,String s2)
  {
    if(s1.length()<s2.length())
      return -1;
    if(s1.length()>s2.length())
      return 1;
    else
      return 0;
  }
}
```