

## Report for Lab 1

### Assignment #1- Debugging “Max Binary Heap”

#### **Bug#1:**

lines 35 and 36 of Heap.java class.

```
if (valueList.size() > (2*index)-1){  
    return (2*(index)-1);  
}
```

Corrected as:

```
if (valueList.size() > (2*index)+1){  
    return (2*(index)+1);  
}
```

#### **Bug#2**

line 71 of Heap.java class:

```
return index/2;
```

Corrected as:

```
return (index-1)/2;
```

#### **Bug#3:**

line 89 of Heap.java class.

```
ValueList.set(index, rightChild);
```

Corrected as:

```
ValueList.set(index, leftChild);
```

#### **Bug#4:**

line 97 of Heap.java class.

BubbleDown method for right side was not written.

Corrected as:

```
Added BubbleDown(rightChildIndex);
```

**Bug#5:**

line 115 of Heap.java class.  
valueList.set(parent,index);

Corrected as:

valueList.set(index,parent);

**Bug#6:**

line 149 and 152 of Heap.java class.

```
if (lastElem < parentOfRemoved){  
    BubbleUp(indexOfRemoveElem);  
}  
else if (lastElem > parentOfRemoved){  
    BubbleDown(indexOfRemoveElem);  
}
```

Corrected as:

```
if (lastElem < parentOfRemoved){  
    BubbleDown(indexOfRemoveElem);  
}  
else if (lastElem > parentOfRemoved){  
    BubbleUp(indexOfRemoveElem);  
}
```

**Assignment #2 - Debugging “Genetic algorithm”****Bug#1:**

line 13 of Individual.java class.  
list.add((int)(Math.random()\*8));

Corrected as:

list.add((int)(Math.random()%8));

**Bug#2:**

line 19 of Algorithm.java class.

```
for (int i = 7; i >0; i--) {  
    for (int j = 7; j >0; j--) {
```

Corrected as:

```
for (int i = 7; i >=0; i--) {  
    for (int j = 7; j >0; j--) {
```

**Bug#3:**

line 41 of Algorithm.java class.

```
if (viewableElem-current==diff) return false;
```

Corrected as:

```
if (Math.Abs(viewableElem-current)==diff) return false;
```

**Bug#4**

line 27 of Algorithm.java class.

```
if (checkDiagonals(iv,iv.list.get(i), i)) clashes += 1;
```

Corrected as:

```
if (!checkDiagonals(iv,iv.list.get(i), i)) clashes += 1;
```

**Bug#5**

line 68 of Algorithm.java class.

```
halfPop.individuals.add(nextGenIv2);
```

Corrected as:

```
newPop.individuals.add(nextGenIv2);
```