Algorithms Worksheet 5

This week there are two question each worth four marks, there are two marks for attendance.

1. Heapify the list $(15, 2, 23, 19, 24, 13, 8)$.

2. Consider the following example code, taken from the wikipedia article on loop invariants:

```
1  int max(int n, const int a[]) {
2      int m = a[0];
3      int i = 1;
4      while (i != n) {
5          if (m < a[i])
6              m = a[i];
7          ++i;
8
9      }
10     return m;
11 }
```

Explain what is meant by the claim that

m is the maximum of `a[0...i-1]`

is a loop invariant for this function whose purpose is to find the maximum in `a`.