1. (4 points) In terms of $n$ what is the asymptotically tight Big-$\Theta$ notation for the run time of the following piece of code? Hint: std::vector is an array based list and $v.insert(v.begin(), x)$ inserts the value $x$ at the beginning of the list. Also the answer is not $\Theta(n)$.

```cpp
std::vector<int> v;
for(int i = 0; i < n; i++) {
    v.insert(v.begin(),i);
}
```

2. (4 points)
   (a) Insert the integers in $L = \{7, 8, 16, 15, 2, 6, 5\}$ in order into the hashmap using linear probing and the provided hash function.

```cpp
int hash(int x) {
    return (2*x + 2) % 9;
}
```

   (b) What is the load factor of the hash map after inserting the integers in $L$?