W13L2: Static Hashing

name:
id:

1. Given a hash table of size 31, integer hash keys k, and a hash function

$$h_1(k) = k\%31$$

a) In which slots are 10, 19, 46 and 47 entered?

10:             19:   46:   47:

2) Assume 10, 19, 46 and 47 have been entered using h_1

a) Using the table from 1 and linear probing (step = 1)

In which slot is 41 entered next?

Where did collisions occur (if any)?

In which slot is 15 entered next?

Where did collisions occur (if any)?

In which slot is 77 entered next?

Where did collisions occur (if any)?

b) Using the table from 1 and quadratic probing (step = n^2)

In which slot is 41 entered next?

Where did collisions occur (if any)?

In which slot is 15 entered next?

Where did collisions occur (if any)?

In which slot is 77 entered next?

Where did collisions occur (if any)?

c) Using the table from 1 and double hashing: $h_2(k) = 13 - k\%13$

In which slot is 41 entered next?

Where did collisions occur (if any)?

In which slot is 72 entered next?

Where did collisions occur (if any)?

In which slot is 50 entered next?

Where did collisions occur (if any)?

d) Using the table from 1 and chain hashing, draw the table after inserting 15, 41, 76, 108:

2) Write pseudocode for the double hashing algorithm to determine the slot an integer should be stored in, using hash functions h1 and h2 from above. Assume t is initially filled with null values.

```
int doubleHash(Integer n, Integer[] t) {
      //return index of n in table t
```