Discipline of Computing and IT
University of Newcastle

SENG1120/6120 – Semester 1, 2018
Lab 10 (Week 11)

This week's laboratory provides practice in use of hashing. The task specifies the use of an array with a given `CAPACITY`. You can start with a capacity of 20.

The array will be used to store integers. The hash function takes an input integer, multiplies it by a key (98773) and uses `% CAPACITY` to find the correct index in the array. The hash function is:

```
int hashFun(int value) {return (value*98773) % CAPACITY;}
```

Implement the following steps:

1. Input a number from the user.
2. Store the number in the array, in the location obtained using the hash function. If there is a collision, warn the user about it and don't insert the number.
3. Print the contents of the array. Empty positions should be printed as "NULL"
4. Repeat 1-2-3 10 times.
5. Input a number from the user.
6. Check if the number is in the array. If it is, then remove it.
7. Print the contents of the array. Empty positions should be printed as "NULL"
8. Repeat 5-6-7 10 times.

Now test your code with arrays of different sizes to understand how often collisions might happen.

If you want to learn more, try the following:

- When you add a new item to the array, if there is a collision, increase the size of the array by a factor of 2, and re-hash the contents of the array to the new array size.

Good Luck!