

CPSC 335 – Programming Assignment 4

Pseudocode

First Hash Function - place_in_hash_tables()

```
temporary_value  $\leftarrow$  table[position][index]  
table[position][index]  $\leftarrow$  temporary_s  
temporary_s  $\leftarrow$  temporary_value
```

```
if index is 1  
    index  $\leftarrow$  0  
else  
    index  $\leftarrow$  1
```

```
position  $\leftarrow$  f(temporary_s, index)  
counter  $\leftarrow$  counter + 1
```

Second Hash Function

```
value  $\leftarrow$  character_string[length - 0 - 1]  
value  $\leftarrow$  value % tablesize
```

```
if value is less than 0  
    value += tablesize
```

```
if length is 1  
    return value
```

```
loop 1 to length of character string  
    temp = character_string[length - i - 1]  
    power  $\leftarrow$  power of 31
```

```
power  $\leftarrow$  power % tablesize
```

```
if power is less than 0  
    power  $\leftarrow$  power + tablesize
```

```
value  $\leftarrow$  value + temp * power  
value  $\leftarrow$  value % tablesize
```

```
if value is less than 0  
    value  $\leftarrow$  value + tablesize  
return value
```

Cuckoo Look-up Function

```
procedure lookup(x)  
    return table1[f1(x)] = x or table2[f2(x)] = x  
end
```

Cuckoo Insert Function

```
procedure insert(x)  
    if table1[f1(x)] = x or table2[f2(x)] = x then return  
        position  $\leftarrow$  f1(x);  
    loop  $n$  times  
        if table1[position] = NULL  
            then {table1[position]  $\leftarrow$  x  
                return  
                x  $\leftrightarrow$  table1[position];  
                if position = f1(x)  
                    then position  $\leftarrow$  f2(x)  
                else position  $\leftarrow$  f1(x);  
            }  
    rehash(); insert(x)  
end
```

Table

	Table T1 – Index 0	Table T2 – Index 1
[0]	Online algorithms	
[1]		Some related problem
[2]	Self-Stabilization	Monge Properties
[3]	are known	Fullerton
[4]	Quantum Nature of Universe	Server Problem
[5]	In physics and	College of Engineering
[6]	One of the greatest	Optimal Tree Construction
[7]		
[8]		
[9]	Cuckoo Hashing	
[10]		
[11]	Algorithm Engineering	Matrix Searching
[12]	Science	
[13]		and Computer Science
[14]	Department of Computer	Dynamic Programming
[15]	emphasis on	mysteries in science
[16]	String Matching	California State University