

## Homework 11

### Problem 11.1

a)  $\langle 3, 10, 2, 4 \rangle$ ,  $m = 5$ ,  $h_1(k) = k \bmod 5$ ,  $h_2(k) = 7k \bmod 8$

$$\Rightarrow h(k, i) = (h_1(k) + i \cdot h_2(k)) \bmod 5$$

$$h_1(3) = 3 \bmod 5 = 3$$

$$h(3, 0) = (3 + 0) \bmod 5 = 3$$

			3	
--	--	--	---	--

$$h_1(10) = 10 \bmod 5 = 0$$

$$h(10, 0) = (0 + 0) \bmod 5 = 0$$

10			3	
----	--	--	---	--

$$h_1(2) = 2 \bmod 5 = 2$$

$$h(2, 0) = (2 + 0) \bmod 5 = 2$$

10		2	3	
----	--	---	---	--

$$h_1(4) = 4 \bmod 5 = 4$$

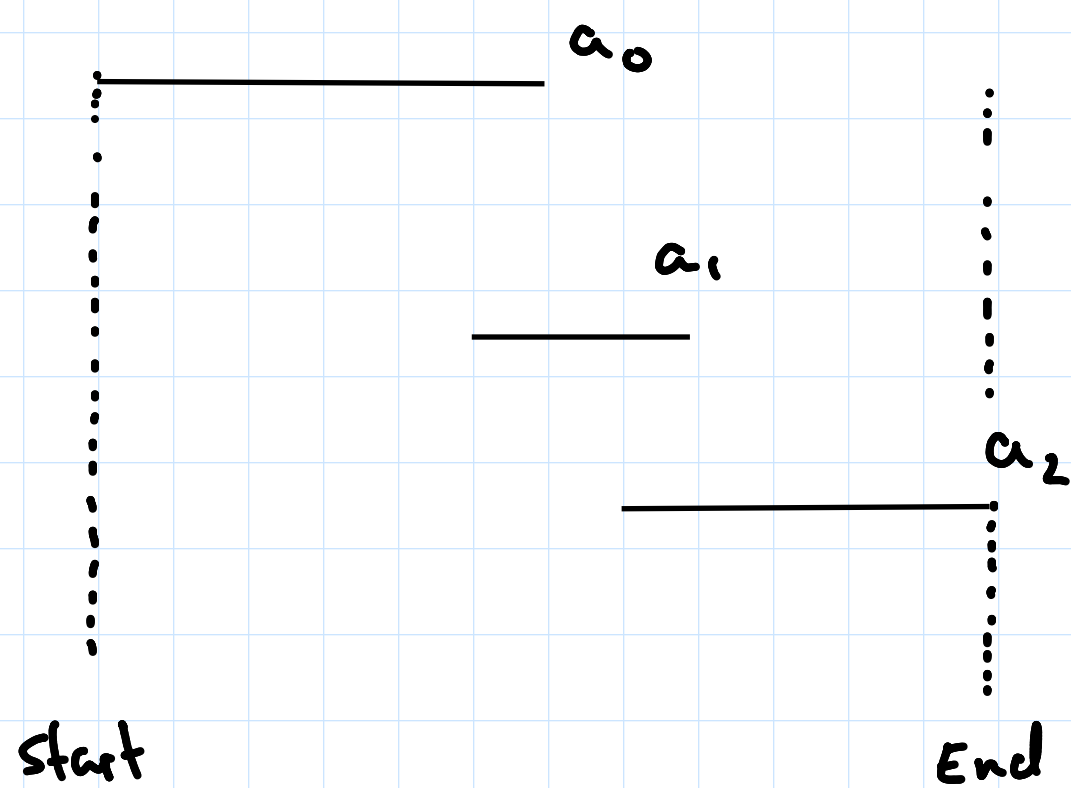
$$h(4, 0) = (4 + 0) \bmod 5 = 4$$

10		2	3	4
----	--	---	---	---

No collisions. If there were,  $i$  would be incremented, the  $h_2(k)$  will be computed and finally  $h(k, i)$  will be executed. This will repeat until collision is resolved.

## Problem 11.2

a) Consider:



The global solution would be  $\{a_1, a_2\}$ , but since we are taking the shortest duration we get  $\{a_1\}$ .