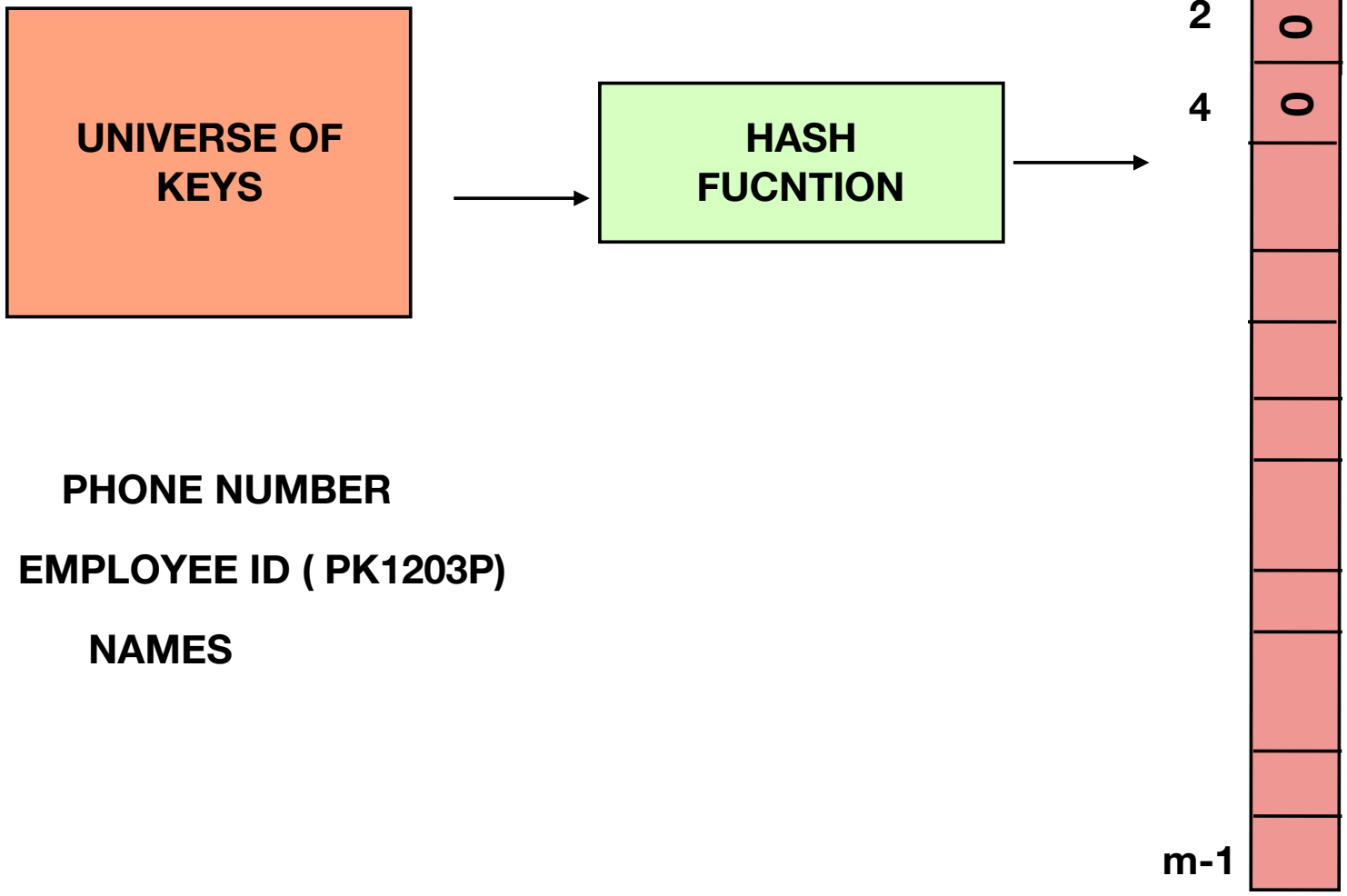
HASHING DATA STRUCTURE

- HASH INTRODUCTION and FUNCTION
-



PHONE NUMBER

EMPLOYEE ID (PK1203P)

NAMES

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HASHING DATA STRUCTURE

- **HOW HASH FUNCTION WORK ?**
- **Should always map a large key to same small key**
- **Should generate values from 0 to m-1**
- **Should be fast, O(1) for integers, and O(len) for string of length “len”**
- **Should uniformly distribute large key into Hash Table slots**

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HASHING DATA STRUCTURE

- Example of Hash Function

- H (large_key) = large_key%m

ideally, choose prime number

Chance of collision is less

Bad value of m -> power of 2, 10

- For strings, weighted sum
  str [ ] = “abcd”

str[0]* x^0 + str[1]* x^1 + str[2]* x^2 + str[3]* x^3

- Universally Distributed the keys in Table

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HASHING DATA STRUCTURE

- Collision Handling

- If we know keys in Advance then, we can Perfect Hashing

  Let's suppose You Have Hash Table of size 10

  You have to insert 10 Phone numbers in hash Table

  You choose A function, Like last Digit of Phone number as INDEX

  Then, collision is Bound to Happen

- One Interesting fact 

  Birthday Paradox

  If There is 23 people in room then two person have same Birthday has probability of 50%

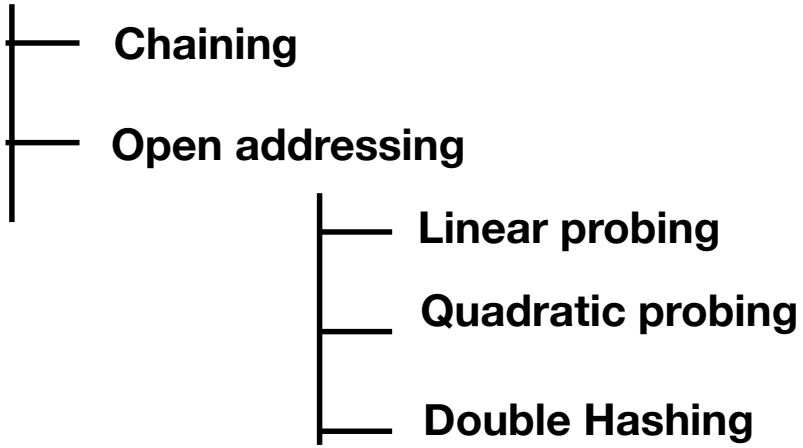
  70 People -> 99.9%

Hello world

HASHING DATA STRUCTURE

- **Collision Handling**

- **If we do not know keys in Advance then, we can use one of Following:-**



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