HASH FUNCTIONS

MID-SQUARE FUNCTION

Mid-Square hashing is a hashing technique in which the key is multiplied by itself and the address is obtained by selecting an appropriate number of digits from the middle of the square.

The number of digits selected depends on the size of the table.

Example: If key = 10 is to be transformed (10)^2 = 100

$h(31) = 31^2 = 961$

$h(15) = 15^2 = 255$

$h(22) = 22^2 = 484$

Index	Value
5	15
6	31
7	
8	22

EXTRACTION FUNCTION

The Extraction method uses parts of the key to build the hash value, typically by extracting certain digits from the key.

This method is dependent on the keys having a set of digits that are uniformly distributed.

- Six digit employee number is used to hash three digit address (000-999)
- Select first, third and fourth digits use them as address

379452-394
121267-112
378845-388
160252-102
045128-051

RADIX TRANSFORMATION FUNCTION

Radix Transformation involves converting the key to a different number base and using parts of the resulting number as the hash value.

It is useful when the keys are not random and have a pattern that can be dispersed by changing the radix.

- Convert the key to a different base and then use modulo arithmetic.
- Example:
  - Address space is 100.
  - Key is 435_{10}
  - Conversion: 382_{11}
  - 382 mod 100 = 82 (hash address)